IMPERIAL MYCOLOGICAL
2 SEPT. 1936
INSTITUTE

British Guiana.

ADMINISTRATION REPORT

OF THE

DIRECTOR OF AGRICULTURE

FOR THE YEAR

1935.

GEORGETOWN, DEMERARA:
PRINTERS TO THE GOVERNMENT OF BRITISH GUIANA.
"THE ARGOSY" COMPANY, LIMITED.
1936.

DEPARTMENT OF AGRICULTURE.

ADMINISTRATION.

Director of Agriculture ...	...Prof. the Hon. J. Sydney Dash, B.Sc. (Agric.).
Deputy Director	...F. Burnett, M.C., M.A.

Clerical Staff.

Senior Clerk	...J. F. Irving, M.C.
Registrar of Banks... ..	...W G. Delph.
Class III. Clerks	...A. A. Thorne, Miss N. Green, Miss D. M. Terrill.
Probationers	...Miss M. Cheong, E. S. Douglas, P. O. Jackson.
Librarian	...Miss V. Chan Choong.

RESEARCH BRANCH.

Botany and Mycology.

Botanist-Mycologist and Superintendent, Botanic Gardens :
E. B. Martyn, B.A., A.I.C.T.A.

Laboratory Assistant :
N. Persaud.

Chemistry.

Chemist-Ecologist :
R. R. Follett-Smith, B.Sc., A.R.C.S.

Assistant Chemist :
C. L. C. Bourne.

Entomology.

Entomologist :
L. D. Cleare, F.R.E.S., F.L.S. (seconded).

Entomologist, Supernumerary :
F. A. Squire, B.Sc.

Laboratory Assistant :
C. Williams.

Rice.

Plant Breeder :
L. E. W. Codd, M.Sc.

Sugar.

(In co-operation with the Sugar Industry).

Sugar Agronomist :
C. H. B. Williams, M.A., A.I.C.T.A., Dip. Agr.

Laboratory Assistants :
L. A. Robinson.
H. B. Singh.

Statistical Clerk :
J. B. Bourne.

METEOROLOGICAL BRANCH.

Meteorological Observer :
D. D. Blackman.

Meteorological Assistant :
J. E. Isaacs.

FIELD BRANCH.

Agricultural Superintendents :
Berbice—J. D. Gillespie, B.Sc
Demerara, East—E. M. Peterkin.
Demerara, East Bank—H. D. Huggins, M.Sc., Dip. Agr.
Demerara, West—A. A. Abraham.
Essequibo—H. Macluskie, Dip. Agr.

Assistant Agricultural Superintendent :
Essequibo—E. G. Benson, B.Sc., Dip Agr., A.I.C.T.A.

Agricultural Instructors :
Berbice—E. M. Morgan.
Botanic Gardens—H. A. Cole.
Demerara, East—C. C. Dowding. W. A. Bovell.
Essequibo—A. W. Sears.
North West District—L. E. McKinnon

Agricultural Assistants :
Berbice—H. B. France.
Demerara, East—J. Indrobeharry.

Sugar.

Field Manager (Central Station) :
C. Cameron.

Field Assistants :
L. A. Forte.
St. George C. Cooper, Dip. Agr.
B. A. McArthur.

LIVESTOCK BRANCH.

Veterinary Surgeon :
T. Bone, O.B.E., M.R.C.V.S.

RICE GRADING BRANCH.

Grading Inspector :
H. E. H. Gadd.

Examiners :
G. L. Leitch.
R. R. Ross.

ADVISORY BOARD OF AGRICULTURE.

Director of Agriculture, Chairman, *ex-officio.*
Deputy Director of Agriculture, Vice-Chairman, *ex officio.*

Hon. R. E. Brassington	Members.
„ M. B. G. Austin	
„ E. M. Walcott	
„ Peer Bacchus	
Mr. C. H. Palmer	
„ R. B. Hunter	
„ S. Andries	

C.S.O. No. 1113/35.

British Guiana.

ADMINISTRATION REPORT

OF THE

DIRECTOR OF AGRICULTURE

FOR THE YEAR

1935.

Printed by the Authority of His Excellency the Governor.

GEORGETOWN, DEMERARA:

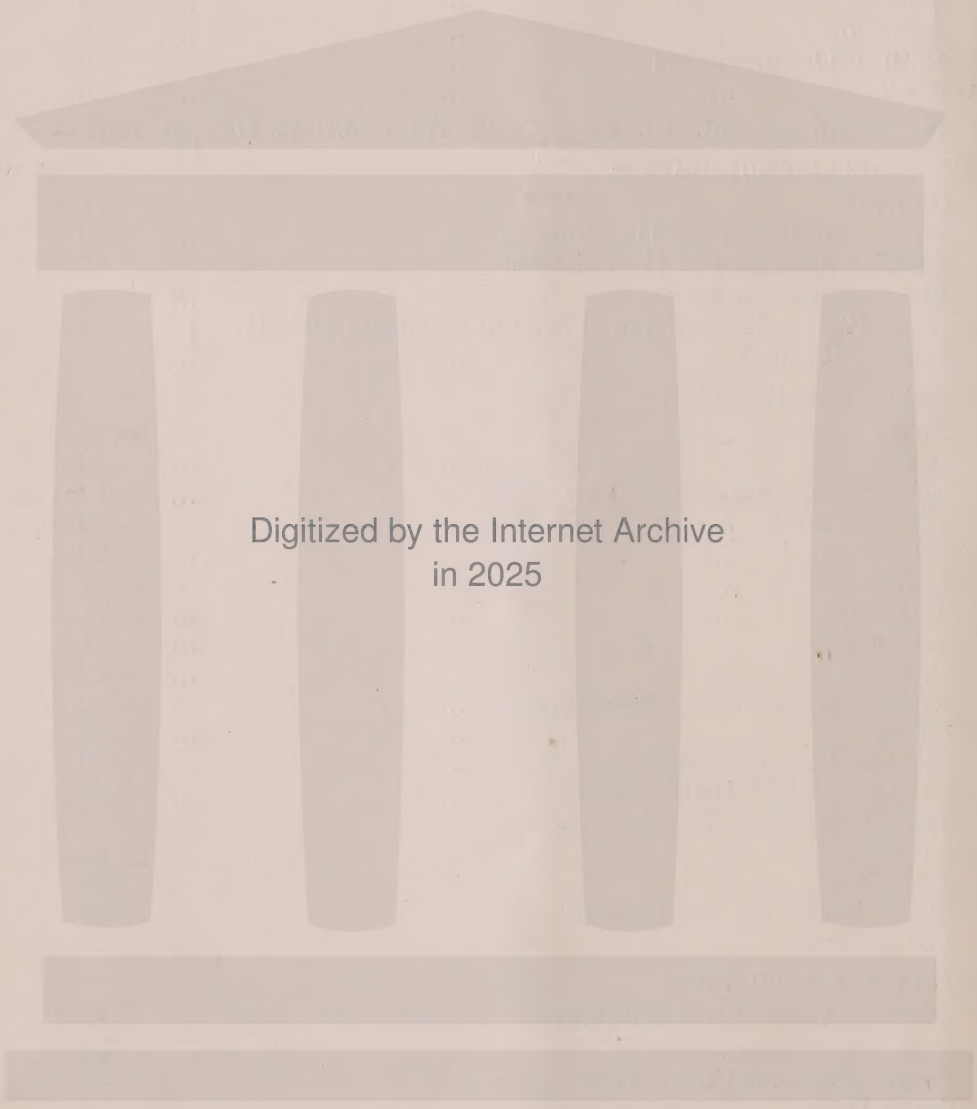
"THE ARGOSY" COMPANY, LIMITED, PRINTERS TO THE GOVERNMENT OF BRITISH GUIANA.

1936.

No. 16,593.

TABLE OF CONTENTS.

	Page.
SECTION I—AGRICULTURE IN THE COLONY—	
General	1
Weather Conditions	2
Agricultural Industries :	
Sugar	3
Rice	5
Coconuts	6
Coffee	7
Citrus	8
Vegetable Crops...	8
Cacao	8
Tobacco	9
Agricultural Organisations	9
Livestock	10
SECTION II—WORK OF THE DEPARTMENT OF AGRICULTURE DURING 1935—	
WORK OF THE DISTRICT STAFF—	
General	11
Pure Line Seed Padi Distribution	12
District Agricultural Committees	13
Field Competitions	13
Anna Regina Estates and Bush Lot Land Settlement ...	13
Census Returns...	13
RESEARCH AND EXPERIMENT—	
Sugar	14
Rice	16
Minor Crop Improvement	19
Poison Plants	20
Citrus	20
Coffee	21
Tobacco	21
Beekeeping	21
Bananas	22
Experimental Shipments of Fruit	22
Cacao	23
Seed and Plant Exchange	23
Seed and Plant Distribution	23
Botanic Gardens and Nurseries	25
Livestock	25
Chemistry	25
Plant Pathology and Botany	27
Entomology	27
AGRICULTURAL EDUCATION—	
Jubilee Agricultural Exhibition	28
School Gardens	28
Negro Progress Convention	29
Field Days	29
AGRICULTURAL ECONOMICS AND STATISTICS	29
CO-OPERATIVE CREDIT BANKS	30
ADVISORY BOARD OF AGRICULTURE	31
PUBLICATIONS AND LIBRARY	31
SECTION III—ADMINISTRATION—	
Staff	31
Expenditure	32
SECTION IV—AGRICULTURAL LEGISLATION	34
ACKNOWLEDGEMENTS	34



Digitized by the Internet Archive
in 2025

https://archive.org/details/annual-report-agriculture-british-guiana_1935

DEPARTMENT OF AGRICULTURE.

ADMINISTRATION REPORT OF THE DIRECTOR OF AGRICULTURE FOR 1935.

SECTION I.

AGRICULTURE IN THE COLONY.

General.

The characteristic of 1935 was that the standard of agricultural production was unusually high and the level of commodity prices remarkably low.

2. The sugar yields per acre and the total output for the Colony reached an all-time high record; the figures for the 1935 rice crop show that a substantial recovery was made from the adverse effects of the flood and subsequent drought conditions of 1934. On the other hand, prices for sugar were the lowest on record and, so great were the difficulties of disposing of the rice crop that it became necessary to appoint a trade delegation to visit the Caribbean markets on behalf of the industry.

3. It is the very general opinion of the trade that the machinery for the disposal of rice on the export markets is not giving that service which the present conditions demand. It would seem that what is primarily wanted is a better and stronger organisation of the millers in whose hands the welfare of the producer and, indeed, the industry, lies. A strong millers' organisation linked up to an exporters' organisation responsible for handling the shipping end of the business would remove many of the existing marketing problems. The financial entanglements of the rice industry over a long period of years are such that the fullest co-operation of all parties—merchant, miller, grower—is very difficult of attainment. There are 224 mills of varying grades of efficiency (or otherwise) and 31 exporters. However, every effort is being made to evolve some scheme acceptable to the majority engaged in the industry. Unified control would enable the Colony more effectively to meet its competitors. On the other hand, the greatest drawback to progress at the present time is that improvement at the mills has not kept pace with the improvement in the quality of the padi grown and much good padi is being sacrificed in the manufacture of low grade rice. Unless this state of affairs is speedily remedied no organisation which can be evolved will solve the problem caused by competition in the export trade.

4. In 1934 the League of Nations, through the Foreign Office, proposed that certain areas in the Rupununi District be investigated with a view to possible selection for Assyrian settlement. A commission, consisting of Brigadier-General J. C. Browne and Signor Giglioli, was appointed and was accompanied by officers of this Department. An account has been published of the views and observations of these officers and it is accepted that valuable information was collected. Although it was decided that the area should not be selected for settlement by the Assyrians, the data now available indicate some of the problems to be studied if and when other occupation should arise for consideration.

5. Thanks to assistance rendered by the Colonial Development Fund and the Imperial Bureau of Entomology, there was undertaken in 1932 special biological control work in connection with the sugar-cane moth borers *(Diatraea spp.)*. Funds were provided by the industry for the introduction of the Amazon Fly *(Metagonistylum minense)* which has been bred in large quantities and established in all the cane growing areas of the Colony. This work progressed satisfactorily during 1935; it is too soon to state, however, what the ultimate effect on the borer problem will be.

6. Perhaps the newest feature of the Department's activities is its work in agricultural economics. The collection of information in regard to prices, the computation of index numbers for a period extending from pre-war years to the present day, seasonal variation in exports and prices, the supply and demand for credit in farming areas, and wages received by agricultural and other labour have become a regular feature in the recording work of the newly organised economics branch. During the year it was found possible also to initiate a large scale economic survey in the cane farming villages on the East Coast of Demerara. Results which have thus far been obtained have helped to focus attention on how much yet remains to be done in the study of economic problems of our agricultural industries, and to show what the significance of such economic work is to planned agricultural development.

7. The 1935 Jubilee Agricultural Exhibition was held in April and was, by popular acclaim, one of the most successful agricultural efforts in the history of British Guiana.

8. On account of the widespread agitation in Essequibo resulting from the depressed conditions caused by the disappearance of sugar production from the Coast, Government appointed a Commission, with the Director of Agriculture as Chairman, to investigate the problem. The report of the Committee, with recommendations, has been published as Sessional Paper No. 16 of 1935.

9. At the end of the year, Government also appointed a Livestock Trade Committee, with the Director of Agriculture, as Chairman, "to consider and advise on steps to be taken whereby the livestock trade of this country, both for internal and external consumption, can be stimulated."

10. In the realm of agricultural education proposals were on hand at the end of the year for courses in Rural Science and Elementary Agriculture, to be given to elementary school teachers, selected from the several districts of the Colony. In this way it is hoped to provide instruction in the primary schools with a definite agricultural bias.

Weather Conditions.

11. Details of the meteorological data obtained during the year are to be found in the Annual Meteorological Report of the Department. The rainfall was normal in most parts of the Colony until the end of the year when the 'Christmas Rains' were far below the average, the total rainfall for December, recorded at the Botanic Gardens, being only 4.60 inches as compared with an average of 11.93 inches, and being in fact the lowest record for this month since 1911.

12. Earlier in the year with the exception of a rainfall in February above the average, the seasons pursued their normal course, and dry weather which caused a partial drought on the Upper East Coast, Demerara, and on the West Coast, Berbice, continued in the early months until the mid-year rains set in about the middle of May. The long wet season was, however, prolonged until the end of August, an unusual number of thunderstorms bringing the rainfall for that month above normal. Subsequently the usual autumn dry weather supervened, and continued to the end of the year.

13. The total rainfall for the year as recorded at the Botanic Gardens was 86.35 inches which is only two inches below the average and the distribution throughout the year was on the whole good, periodic showers falling even during the dry months.

14. From the point of view of crop production, the rainfall distribution during the year under review was satisfactory. This somewhat compensated for the very unusual weather conditions of 1934 when torrential rainfall, during the first two

weeks of the year, which caused much crop destruction, was followed by a prolonged drought of five months resulting in a loss equally if not more extensive.

15. The following table shows the mean rainfall in the coastal area for 1935 in the three counties, and the average rainfall for the period 1926–1935 inclusive.

TABLE I.

MEAN RAINFALL AT COASTAL STATIONS.

Months.	Berbice.		Demerara.		Essequibo.	
	1935. Inches.	1926-1935. Inches.	1935. Inches.	1926-1935. Inches.	1935. Inches.	1926-1935. Inches.
January	4.04	9.18	4.59	10.63	3.41	10.24
February	13.12	5.21	10.38	4.88	10.89	5.56
March	1.88	3.73	3.88	3.47	4.12	3.03
April	1.01	6.02	1.51	5.56	.80	4.59
May	10.41	11.73	11.60	12.79	11.99	13.61
June	18.08	12.20	17.50	14.14	16.23	14.18
July	11.34	10.94	9.48	11.70	8.56	12.28
August	10.67	5.90	10.13	7.29	7.49	7.67
September	4.14	2.97	5.18	2 82	5.98	3.71
October	5.83	2.61	4.58	3.53	6.30	4.47
November	1.48	3.12	3.91	4.30	4.33	5.68
December	2.80	9.62	4.88	11.45	4.88	12.96
Total	84.80	83.23	87 62	92 56	84.98	97.98

AGRICULTURAL INDUSTRIES.

Sugar.

16. The major annual statistics covering the sugar industry for the ten years ending 1935 are shown in Table II.

TABLE II.

CANE ACREAGES, AND THE PRODUCTION AND EXPORTS OF SUGAR AND ITS BY-PRODUCTS—1926-1935.

Year.	Sugar Cane Acreage Reaped. English acres.	Sugar Produced from Area Reaped. Tons.	Yield per Acre Reaped. Tons.	Exports — Sugar. Tons.	Total Value in Dollars.	Value per ton in dollars.	Rum Produced. Proof Gallons.	Rum Exported. Proof Gallons.	Molasses Exported. Gallons.	Molascuit Exported. Tons.
1926	55,728	98,152	1.76	84,659	6,050,257	71.5	1,622,966	789,643	2,017,862	1,075
1927	56,534	114,030	2.01	109,616	8,787,585	80.1	1,436,010	1,081,020	2,677,457	915
1928	53,489	116,484	2.17	114,687	8,124,666	71.0	1,745,293	1,269,923	2,873,468	1,832
1929	56,126	117,254	2.08	100,449	5,943,788	59.1	1,338,353	1,109,482	2,536,623	1,803
1930	54,264*	127,764*	2.35	114,542	5,418,884	47.3	1,571,371	846,319	3,851,337	400
1931	54,999*	126,143*	2.29	119,346	5,326,755	44.6	1,002,267	722,076	7,106,997	66
1932	55,240*	148,634*	2.69	137,078	6,442,515	47.0	840,617	645,511	7,554,520	205
1933	55,811*	141,956*	2.54	127,083	5,745,151	44.9	1,239,355	883,019	8,137,233	178
1934	53,966*	132,240*	2.45	129,913	5,568,454	42.8	1,346,307	1,120,090	5,384,834	...
1935	59,932*	178,041*	2.97	174,156	6,926,439	39.7	1,817,875	1,073,406	5,949,393	205

* Includes farmers' canes.

17. The total sugar crop for the year was 178,041 tons as compared with 132,240 tons in 1934. Of the total of 67,914 English acres allocated to cane, 57,725 were reaped on the estates. The yield amounted to 174,697 tons of sugar, an average of 3.02 tons per English acre. In addition, the estates manufactured 3,344 tons of sugar from farmers' canes, of which 2,207 acres were reaped. The general average yield, including farmers' canes, was 2.97 tons sugar per acre.

18. Last year's sugar crop was easily a record one, both as regards total output and yield per acre. There has been a small increase in acreage reaped over the average for recent years, but this enhanced output must, in the main, be attributed to the increased yield per acre. This may be attributed to satisfactory weather conditions, the increased use of flood-fallowing and irrigation, the extension of the varieties Diamond 10 and P.O.J. 2878, improved drainage, heavier applications of sulphate of ammonia and the abandonment of old ratoon fields. Increased factory efficiency has also contributed.

19. The autumn reaping was marred in certain districts by labour strikes and minor disturbances which are now the subject of a Commission of investigation. These events had the effect of reducing the output and increasing the costs of production.

20. According to figures extracted from the "Annual Reports of the Comptroller of Customs" 1911—35, prices received for sugar exported from this Colony were lower in 1935 than any other year during the period. It can be well appreciated, therefore, of what great assistance to the industry was the continuation of the special preference on the United Kingdom market of three shillings per cwt. on this Colony's quota of 60,000 tons. The preference on the Canadian market was also of great assistance and the Dominion Bureau of Statistics, Ottawa, points out that there arrived in Canada from British Guiana, in 1935, 105,897 tons of sugar, as compared with 41,300 tons in 1934 and 43,638 tons in 1933. It is gratifying to note that, at the close of the year, the statistical position of sugar stocks was better than at any time since the Chadbourne Plan came into operation and it is hoped that future prices will show a trend upwards.

21. The sugar estates have very kindly supplied the Department of Agriculture with particulars as to the area under each variety of cane. Table III shows that the replacement of D. 625 by Diamond 10 and P.O.J. 2878 is continuing.

TABLE III.

COMPARATIVE ACREAGE UNDER D. 625, DIAMOND 10 AND P.O.J. 2878.

Year.	Variety.		
	D. 625 acres.	Diamond 10. acres.	P.O.J. 2878. acres.
1933 ...	32,964	5,563	...
1934 ...	32,703	8,796	746
1935 ...	32,429	13,303	2,763
1936 ...	28,552	18,850	6,214

22. Of the 1936 acreage, 44.6 per cent. is in D. 625, 29.4 per cent. in Diamond 10 and 9.7 per cent. in P.O.J. 2878. There is, unfortunately, no drop in the areas returned as "mixed," which still amount to 8,112 acres, or 12.7 per cent. of the total. S.C. 12/4 and B.H. 10/12 occupy, respectively, 940 and 674 acres.

23. The commercial results obtained from P.O.J. 2878 and Diamond 10 continue to be superior to those from D. 625 and the change-over to these two varieties is likely to proceed.

24. *Cane-farming.*—The annual output of cane farmers' sugar during the past six years has been as follows :—

1930	...	1,625 tons.
1931	...	1,631 „
1932	...	2,047 „
1933	...	2,328 „
1934	...	2,122 „
1935	...	3,344 „

25. This industry is expanding gradually and on the East Coast, Demerara, new areas have been taken in notably at Buxton and Beterverwagting. The total area under farmers' canes in this district is 1,618 acres yielding 2,255 tons sugar. The sugar estates continued to pay a minimum price of $2.20 per ton of cane. Cane farmers are being encouraged and assisted in establishing nurseries of the cane varieties Diamond 10 and P. O. J. 2878.

Rice.

26. The area occupied by rice during 1935 was 70,882 acres but, including the second or spring crop, the area actually reaped was 83,566 acres. The yield was returned at 85,522 tons padi. The amount of rice exported was 10,565 tons with a value of $473,086 as against 14,700 tons with a value of $583,090 for 1934, and was the lowest on record since 1927. See also para. 29.

27. Table IV gives particulars of rice production and exports from 1926–1935.

TABLE IV.

RICE ACREAGES, PRODUCTION AND EXPORTS, 1926–1935.

Year.	Area Reaped (Spring and Autumn Crops) English Acres.					Yields.		Exports.		
	Berbice.	Demerara.	Essequibo. Mainland	Essequibo. Islands	British Guiana total acreage (reaped).	Padi tons.	Rice tons (60% yield of cleaned Rice from Padi)	Rice. Tons.	Rice. Total Value in dollars.	Rice. Value per ton in dollars.
1926 ..	25,112	11,588	9,837	5,580	52,117	49,899	29,939	2,914	218,146	74·8
1927 ...	20,182	14,507	13,240	5,123	53,052	59,748	35,848	11,497	723,871	62·9
1928 ...	22,028	17,886	12,356	6,182	58,452	61,144	36,686	18,083	1,114,147	61·6
1929 ...	28,121	20,962	11,023	6,636	66,742	72,096	43,257	14,091	876,407	62·1
1930 ...	26,689	18,399	10,786	7,608	63,482	64,252	38,551	22,480	1,090,385	48·5
1931 ...	29,217	34,955	10,445	8,875	83,492	78,424	47,054	23,632	1,060,339	44·8
1932 ...	29,218	37,275	12,556	8,892	87,941	84,783	50,869	28,541	1,187,871	41·2
1933 ...	27,120	37,696	13,197	9,112	87,125	63,524	38,154	29,120	1,062,470	36·4
1934 ..	24,990	31,213	6,638	8,110	70,951	55.112	31,067	14,700	583,090	39·6
1935 ...	32,971	32,713	10,054	7,828	83,566	85,522	51,313	10,565	473,086	44·7

28. The 1935 season was a favourable one for rice and excellent returns were obtained throughout the Colony. A steady improvement is noticeable in the quality of padi grown and although large areas of pure line padi were destroyed during the 1934 floods, a strenuous campaign of pure seed distribution has resulted in the re-establishment of such areas damaged and an extension of the acreage under pure line.

29. The low exports in 1935 were in a large measure caused by abnormal weather conditions: the prolonged drought which set in after the floods seriously affected the mid-year sowings and caused a reduction in the area intended for the 1934 autumn crop—which would normally be exported in 1935. Field conditions have, however, improved in many districts as a result of expenditure undertaken to minimise losses from similar occurrences. Weather conditions and the fact that British Guiana is herself a large consumer of rice are important factors in preventing forward statements in regard to probable exportable surplus for the Caribbean Islands—our main market. In this connection India has a decided advantage on account of her very large area, size and efficiency of mills, cheapness of production and control of exports. But proximity to West Indian markets, freshness of stocks and mutual interests should be strong inducements in British Guiana's favour. Indian competition does not affect our higher grades, but our lower—for which the same price is asked although below Indian quality in appearance. The large number of inefficient rice mills and independent exporters locally are a severe handicap and the Department's seed work is hampered and vitiated by the negligence of millers generally to discriminate between good and bad padi delivered or even, in many cases, to extend themselves to the fullest degree necessary to ensure that the best seed is planted and that the efforts of the Department are not nullified. Unless, however, further and more rapid improvement takes place at the mills it is felt that the Colony will not hold its rightful place as a rice exporter to the Caribbean Islands. Dependability of supplies and close uniformity in consignments are essential trade requirements.

30. There is a gradual drift among purchasers in the neighbouring colonies towards group-buying and contracting for regular supplies in advance. By reason

of the proximity to our natural markets, the limitations of a fluctuating exportable surplus and the financial methods more or less peculiar to rice production, local exporters have always traded individually. This arrangement may have been satisfactory in the past when production was not at the figure it has reached to-day and Indian competition not so severe. With expanding production, however, together with lower prices and the development of group-buying, a change is needed, and there are indications that some selling counterpart of the buying organisations which have developed in the Caribbean markets is desired.

31. Table V gives particulars of rice exported during 1935 according to grade.

TABLE V.

AMOUNT OF RICE GRADED IN BRITISH GUIANA—1935.

Months.	Whole Grain Super.	Super.	No. 1 Extra.	No. 1.	No. 2.	No. 3.	White Rice.		Broken.	Super Broken.	Total.
							A.	B.			
	bags.	bags.	bags.	bags.	bags.	bags.	bags.	bags.	bags.	bags.	bags.
January ...	...	2,168	1,861	811	4,516	3,956	...	35	...	25	13,372
February ...	...	3,145	2,369	777	6,116	1,432	60	...	3	6	13,908
March ...	...	2,536	1,780	2,975	6,062	6,236	214	195	...	8	20,006
April ...	...	2,876	1,898	931	2,690	3,817	1	...	70	12	12,295
May ...	...	1,752	1,329	66	3,443	5,801	286	145	36	5	12,863
June ..	...	1,200	628	53	2,813	3,541	53	265	22	50	8,625
July ...	..	1,173	448	27	1,367	3,043	267	552	2	1	6,880
August ...	...	1,221	578	12	2 332	6,446	75	16	12	6	10,698
September ...	...	582	370	249	2,414	3,044	195	17	1	5	6,877
October ...	...	1,520	767	901	3,138	1,972	118	136	25	35	8,612
November ...	...	1,630	2,160	1,351	2,703	2,503	30	...	10	12	10,399
December ...	...	1,775	416	188	3,742	6,188	129	265	70	5	12,778
Total—bags ...	...	21,578	14,604	8,341	41,336	47,979	1,428	1,626	251	170	137,313 *

* Equivalent to 10,565 tons.

Coconuts.

32. The area under coconuts in 1935 was 21,786 English acres. The exports for 1935 were as follows :—Coconuts 2,737,784 valued at $33,891 ; Copra 1,226 tons valued at $55,134 ; Coconut Oil 6,699 gallons valued at $2,912. From a study of Table VI it will be seen that there has been an all round increase in the exports of coconuts and by-products during the period under review.

33. The difficulties experienced in enforcing the old Copra Products (Sale and Manufacture) Ordinance resulted in the continued illegal manufacture of edible oil in increasing quantities with the result that the Demerara Oil and Cake Mills, Ltd. were only able to use about 50 per cent. of the copra received by the brokers for the year 1935 as against 62.5 per cent. in 1934 ; the balance amounting to 685 tons had to be exported. 522 tons of this were exported to the United Kingdom at an average price of $2.08 per 100 lb., and 166 tons were exported to Barbados at an average price of $2.37 per 100 lb.

34. It will be seen, therefore, that despite a considerable increase in the European prices and a reduction in the quantity consumed by the Demerara Oil and Cake Mills, Ltd., (for which they had to pay $3 per 100 lb.) the Ordinance, nevertheless, had the effect of enabling brokers to distribute a nett figure to producers of $2.27 per 100 lb. Had there been no local protection of this nature, and if all the copra produced in the Colony had had to be exported, producers would have lost at least 19 cents per 100 lb. without taking into account any charges by middlemen.

35. A new Ordinance has been introduced and, with energetic and efficient control, the Colony's revenue should benefit by a considerable amount from the collection of Excise and Income Tax, and producers should obtain a much better price for their product through increased sales to local mills.

36. There was an outbreak of the coconut caterpillar (*Brassolis sophorae* L.) on the East Coast, Demerara.

37. Table VI. gives particulars of coconuts, coconut oil and copra during the period 1926–1935.

Table VI.

COCONUT ACREAGES, AND THE PRODUCTION AND EXPORTS OF COCONUTS AND ITS BY-PRODUCTS—1926-1935.

Year.	Acres under cultivation (English) acres.	No. of Nuts Exported.	Value in Dollars.	Copra Exported, tons.	Value in Dollars.	Coconut Oil Exported gallons.	Value in Dollars.
1926 ...	27,880	815,917	18,739	706	190,055	18,778	18,620
1927 ...	29,235	334,185	6,019	1,163	116,525	25,326	25,271
1928 ...	29,456	321,635	5,939	3,501	352,522	26,244	24,426
1929 ...	29,456	637,812	10,614	3,759	314,350	20,862	16,730
1930 ...	28,052	629,371	7,845	2,010	143,423	26,377	16,059
1931 ...	22,882	1,494,195	13,538	1,381	82,629	20,742	9,254
1932 ...	23,301	962,364	10,484	757	48,936	19,048	10,239
1933 ...	23,452	1,698,175	22,925	921	41,045	20,198	8,904
1934 ...	22,600	2,487,402	32,960	700	23,487	12,662	5,554
1935 ...	21,786	2,737,784	33,891	1,226	55,134	6,699	2,912

Coffee.

38. The area under coffee in 1935 was 4,051 acres. The exports were 210 tons of cured coffee valued at $23,849. The year under review proved one of the most trying that coffee producers have experienced. Not only were prices received the lowest since 1931, but it was extremely difficult to effect sales even at prices quoted. Records show that coffee prices tend to rise in the later months of the year, but not even this advance was experienced. This has reacted unfavourably on the condition of the cultivations, many of which are in a state of neglect. Liberian coffee is the main type produced, and finds a market chiefly in the Northern European countries. The crop is the most important on the pegasse lands of the Colony. The majority of coffee grants are owned by what are usually termed "small farmers." In many instances, the area of the individual holdings, due to expansion in boom times, is greater than can be handled efficiently by the owner and his family. Under such conditions the proprietor finds it difficult to carry on operations without hired labour, which results in a cost of production disproportionate to the market value of the commodity during recent years. As usual, in such cases, debts have been incurred which are likely to be beyond the present resources of the grower. The considered opinion is that the farmer who has been content with a modest livelihood from a family-worked holding say of 10 acres should be able to survive the crisis. It is only fair to state, however, that the soil conditions (pegasse) under which coffee is grown in the Colony render it difficult to apply those intensive methods of cultivation associated with normal agricultural working. As a rule, on these deep pegasse soils, ground provisions, maize, etc., are grown for the first two or three years and until the coffee comes into bearing. By that time the land has ceased to produce remunerative crops of ground provisions and no system (cropping or manurial) has been devised which can satisfactorily and economically maintain fertility. Thus, the farmer, if he is to continue the cultivation of ground provisions, takes in more land which eventually must come into coffee. With low coffee prices and the abandonment of the older low yielding coffee fields, certain of the latter are being put back to ground provisions principally for home consumption—a step in the right direction. Meantime, the export prices for Liberian coffee have gone from bad to worse with little hope of improvement. Sale demand is now so limited and the price so low that any possible improvement in quality is hardly compensated for by the small difference in price between grades. As Liberian coffee has proved itself the only dependable crop in the outlying river areas of the Colony, the present state of affairs is causing considerable anxiety.

39. Table VII shows the acreage, exports and values of this crop from 1926-1935.

Table VII.

COFFEE ACREAGES, EXPORTS AND VALUES—1926-1935.

Year.	Area cultivated (English) acres.	Exports.	
		Tons.	Total Value in Dollars.
1926 ...	5,499	345	132,623
1927 ...	5,546	192	68,844
1928 ...	6,201	410	137,933
1929 ...	6,212	405	104,135
1930 ...	5,363	164	22,400
1931 ...	4,899	355	33,582
1932 ...	5,800	470	69,436
1933 ...	4,630	510	79,594
1934 ...	4,217	317	47,238
1935 ...	4,051	210	23,849

Citrus.

40. The area under citrus and other fruit was 656 acres, exclusive of limes. Plantings in recent years, of grapefruit especially, have begun to fruit.

41. The area under limes was 694 acres. The exports of concentrated lime juice for the year were 3,112 gallons valued at $689 as against 10,468 gallons with a value of $2,013 for 1934, and 597 gallons of essential oil of limes valued at $25,092 as compared with 892 gallons valued at $32,967 in 1934.

42. Table VIII gives statistics bearing on the citrus industry from 1926-1935.

Table VIII.

CITRUS ACREAGES, AND EXPORTS AND VALUES OF CONCENTRATED LIME JUICE AND ESSENTIAL OIL OF LIMES—1926-1935.

Year.	Limes (English) acres.	Citrus and other Fruit (English) acres.	Concentrated Lime-juice Exported. Gallons.	Value in Dollars.	Essential Oil of Limes Exported Gallons.	Value in Dollars.
1926 ...	689	...	4,974	7,156	277	144
1927 ...	705	...	5,249	7,559	273	14,175
1928 ...	695	...	8,124	7,799	440	26,316
1929 ...	635	..	12,717	12,019	801	47,585
1930 ...	740	...	11,373	10,855	660	38,352
1931 ...	747	254	8,347	8,014	590	39,806
1932 ...	787	316	958	920	730	44,728
1933 ...	869	328	Nil	...	1,166	65,014
1934 ...	789	371	10,468	2,013	892	32,967
1935 ...	694	656	3,112	689	597	25,092

Vegetable Crops.

43. The area under ground provisions was 13,246 acres. The area under sweet potatoes shows a slight increase and farmers are concentrating on the cultivation of 'Black Rock' a Barbados variety. At Victoria on the East Coast, Demerara, there is a fairly large area under this variety. Efforts are also being made by farmers to cultivate more peas and beans than hitherto. Lima No. 3, Henderson's Bush Lima and Yard Bean are recommended. There is a marked improvement in the quality of fresh vegetables grown as farmers are at last realizing the value of using good seed. Towards the close of the year the question of organising and further expanding the export trade in plantains to the Carribbean Islands was being considered.

Cacao.

44. The area returned under cacao was 843 acres. There has been a slightly increased demand for cacao seedlings for extension mainly in the Pomeroon and North West Districts, while in West Demerara certain farmers have shown some activity in cleaning up abandoned cultivations.

45. Table IX shows the area under cultivation and the imports of raw cacao and prepared cacao from 1926-1935.

TABLE IX.

CACAO ACREAGES, IMPORTS AND VALUES OF RAW CACAO AND PREPARED CACAO—1926-1935.

Year.	Area cultivated (English) acres.	Cacao exported. lb.	Cacao—Imports.			
			Raw Cacao. lb.	Value in Dollars.	Prepared Ground. lb.	Value in Dollars.
1926 ...	1,356	none	10,216	1,468	163,869	27,090
1927 ...	1,322	,,	10,874	1,663	155,565	29,860
1928 ...	1,265	,,	3,367	423	150,393	27,404
1929 ...	1,514	,,	4,834	539	119,134	19,722
1930 ..	1,514	,,	6,201	637	108,081	18,108
1931 ...	953	,,	9,624	800	121,961	18,250
1932 ...	791	,,	1,147	87	70,764	12,139
1933 ...	797	,,	163	18	109,092	15,187
1934 ...	812	787	3,832	279	106,201	16,033
1935 ...	843	none	4,166	273	115,746	16,930

Tobacco.

46. Tobacco cultivation continues to attract a relatively small number of farmers and on account of the vagaries of the rainfall, is not unusually, an unprofitable undertaking.

AGRICULTURAL ORGANISATIONS.

47. The interest aroused in beekeeping during recent years was fully maintained during 1935. The hive yields are reported to have been much smaller than in 1934, and surplus stocks which have accummulated were almost completely disposed of.

48. The Department of Agriculture continued to work in close co-operation with the British Guiana Beekeepers' Association, on the Executive Committee of which is the Director of Agriculture.

49. A remarkable advance has been made within the last two or three years in regard to the quality of honey produced, the standardisation of containers, the type of label used, and in local sales of this product. Two advertising projects were launched by the joint efforts of the Department and the Association. In the first, a special stand, displaying honey from various districts of the Colony was placed on view at the Jubilee Agricultural Exhibition; in the second, October 28 to November 2 was declared a "Honey Week," the chief feature being a honey exhibit in a prominent show window which was electrically luminated and attracted much interest and comment. Both efforts resulted in a decided fillip to the trade.

50. A Banana Association was mooted at the end of 1934 to foster the cultivation of bananas, with a view to the possibility of creating an export trade in this fruit. One of the objects of the Association was to consider the potentialities of the Cavendish banana as a suitable alternative to the Gros Michel for local banana export—a subject to which reference was made in last year's Administration Report. As an initial step a sub-committee was elected to work in co-operation with the Advisory Board of Agriculture, which committee consisted of the Hon. J. I. D'Aguiar, Hon. E. M. Walcott and Mr. L. E. Moe. The question of a banana industry was the subject of a lengthy debate in the Legislative Council when the following resolution was passed:

> "That His Excellency the Governor be respectfully requested to "consider making provision in the estimate of expenditure for 1936 a "sum of money to meet expenditure:—

(*a*) for the experimental cultivation of selected plots in each of the "counties of the Colony;

(*b*) for assistance for a period of 3 years to the Association recently "formed to deal in the export trade of bananas on a co-operative basis "with such safeguards to Government as may be deemed necessary; and

"That early steps be taken by Government to obtain the necessary "sanction from the Right Honourable the Secretary of State for the "Colonies to give effect to this proposal."

51. It was suggested by the Director of Agriculture to the Livestock Producers that a Cattle Owners' Association be formed to discuss and make recommendations in regard to livestock development and improvement, a small committee of this Association to work in conjunction with the Advisory Board of Agriculture, which would consider in the first instance all recommendations put forward.

LIVESTOCK.

52. There is no material change to report in the methods of animal husbandry and no such change can take place until cattle owners realize the benefits to be obtained from renting grazing land for their animals. The majority of cattle owners leave their young stock and dry cows to fend for themselves on the heavily over-stocked grazing areas, and the most they are prepared to do is to feed cows during their lactation period with cut grass and sometimes concentrates. For a number of years now the *intensive* system of management practised on the Stock Farm has been advocated but is viewed with disfavour by cattle owners, doubtless due to the low prices paid for milk. As it is useless to attempt improvements of pasturage without an assured drainage, the only practical improvement of conditions of coast cattle lies in the direction of limiting the number stocked in *intensively* cultivated areas. It is impossible to ignore the fact that the majority of cattle owners and land owners know what can be done, but none are willing to incur any expense. Legislation with enforcement of regulations is the only method by which pasturage and livestock can be improved on a large scale.

53. Improvement in dairy cattle is handicapped by the fact that the owners are mainly small cow keepers who own no land. Animals of improved breed cannot be placed on the overstocked grazing areas and the owners are faced with the difficult problem of obtaining cut grass. An essential and urgent requirement is that areas should be divided into paddocks for the segregation of the different classes of cattle and that the number of animals on them be strictly limited to the carrying capacity of the land. Admittedly, the problem is not an easy one as the outlay for drainage, fencing, etc., may prove beyond the resources of the small cattle owner.

54. A loan of £1,500, free from interest, repayable in five years, was provided from the Colonial Development Fund to create a Revolving Fund for the purchase of breeding stock in the United Kingdom for eventual distribution in the Colony. It was proposed that this fund would be utilised for the purchase and distribution of bulls (chiefly of beef type immunised to local disease) to approved ranchers and cattle owners in British Guiana on easy terms of repayment as, generally speaking, the ranchers and stock-owners have not the facilities for such importation. The amounts realised from the sale of animals would be paid back to the Fund which would then be available for the purchase of further and additional stock for distribution. Unfortunately, however, considerable difficulty has arisen in getting stockmen to utilise this fund on account of the high landed cost of imported animals under the scheme which necessitates quarantine and immunization at Weybridge, England, and acclimatisation at the Stock Farm, Georgetown. Under the circumstances, therefore, the loan has not been utilised.

55. The Director of Agriculture addressed a meeting of the Berbice Chamber of Commerce on matters pertaining to the livestock industry.

56. His Excellency the Governor appointed in November, 1935, a Livestock Trade Committee with the following terms of reference—

> "To consider and advise on steps to be taken whereby the livestock trade of this country, both for internal and external consumption, can be stimulated."

The personnel of the Committee was as follows :—Director of Agriculture (Chairman), The Comptroller of Customs, the Hon. F. A. Mackey, Mr. A. M. Fulton, Mr. R. V. Evan-Wong and Mr. I. McLean with the Government Veterinary Surgeon as Secretary.

57. The new Animals (Breed and Contagious Diseases) Draft Bill has now reached a stage when it is hoped it will shortly be introduced into Council.

SECTION II.

WORK OF THE DEPARTMENT OF AGRICULTURE DURING 1935.

58. There is given herein a brief resumé of the more important activities of the Agricultural Department during the year, under the following heads :

Work of the District Staff ;—

General ; Pure line seed padi distribution ; District agricultural committees ; Field competitions ; Anna Regina Estates and Bush Lot Land Settlement ; Census returns.

Research and Experiment :—

Sugar ; Rice ; Minor Crop Improvement ; Poison Plants ; Citrus ; Coffee ; Tobacco ; Beekeeping ; Bananas ; Experimental Shipments of Fruit ; Cacao ; Seed and Plant Exchange ; Seed and Plant Distribution ; Botanic Gardens and Nurseries ; Livestock ; Chemistry ; Plant Pathology and Botany ; Entomology.

Agricultural Education ;—

Jubilee Agricultural Exhibition ; School Gardens ; Negro Progress Convention ; Field Days.

Agricultural Economics and Statistics.

Co-Operative Credit Banks.

Advisory Board of Agriculture.

Publications and Library.

WORK OF THE DISTRICT STAFF.

General.

59. The Divisional Agricultural Officers are stationed in the Berbice, East and West Demerara, Essequibo and the North West Districts, and the work undertaken in these several districts is usually given in detail in their annual reports which are published separately. Briefly, such work includes :—

(1) Field experimental work with the major crops (*i.e.* sugar and rice) in collaboration with the specialist officers concerned where such is carried on in their districts.

(2) The organisation of supplies and the distribution of seed padi through accredited padi farmers, and visits to such farms for instructional work at intervals.

(3) Rice mill investigations.

(4) District agricultural inspection and educational work on all matters pertaining to agriculture, including control of crop pests and diseases.

(5) Experiments and demonstrations with various minor crops, distribution of planting material, etc.

(6) Supervision of agricultural stations, sub-stations, livestock centres, school gardens, field competitions, etc.

(7) Encouragement of the extension of areas suitable for fruit, notably citrus, as well as food and money crops supplementary to rice and ground provisions, *e.g.*, green vegetables, peas and beans, papaws, etc., for all of which there is a ready local market.

(8) Collection and collation of agricultural census returns.

(9) Co-operative Credit Banks work.

(10) General extension and advisory work.

(11) Rice grading where such is required.

Pure Line Seed Distribution.

60. Pure line seed padi distribution has formed an important part of the District Officers' work during the year. A strenuous campaign of pure seed distribution and padi competitions has resulted in a steady improvement in yield and quality of the padi grown. Since the beginning of the campaign 1,207,069 lb. of padi have been distributed and the demand for pure seed continues to increase. This is exclusive of 679,560 lb. of selected seed of a high standard of purity distributed as drought or flood relief measures. It is obvious that Government could not possibly undertake to grow sufficient seed every year to plant up the entire Colony's acreage of padi. By the system of distribution now in operation, however, the same results may be achieved at a fraction of the cost. In each district, the Department maintains a block of five to fifteen acres of pure line seed padi. The padi grown is distributed in such a manner that each grower may have a nucleus of pure seed from which to draw for general planting. Take the case of a grower cultivating say 100 acres of padi who will require at least 25 bags of selected seed annually to plant his acreage; he should set aside a small acreage as a seed farm—1½ acres would give him at least 25 bags of high grade seed which would be sufficient the following crop to plant up the whole of the 100 acres. Every year the Department supplies pure seed for the seed farm of 1½ acres at cost price, and it is incumbent upon the grower to keep the padi from his seed farm separate from his general crop and to see that it is stored for planting the following season.

61. During 1935, 181 such seed farms were established throughout the Colony, but it is only with the most rigid co-operation between proprietors, millers, village authorities and farmers that such a system will meet with success.

62. The following table gives particulars of seed padi distributions during the year under review.

Pure Line Seed Padi Distribution—1935.

District	Number of Bags (140 lb.) Distributed.	
	Pure Line Seed Departmental Stocks.	Selected Seed Purchased.
	BAGS.	BAGS.
Essequibo Coast, Wakenaam and Leguan ...	296	286
West Demerara ...	200	670
Experiment Station, Georgetown ...	477½	...
East Demerara ...	155½	525
Berbice ...	405	394
Total ...	1,534	1,875

District Agricultural Committees.

63. Meetings of the District Agricultural Committees in the East and West Demerara Districts were held during the year. The Director of Agriculture is Chairman of both Committees with the District Commissioners as Vice-Chairmen. Representatives from the sugar estates, rice and cane-farming industries are members, as well as the Elected Members of Legislative Council for the districts concerned. The proceedings of the meetings have been published in the *Agricultural Journal of British Guiana.*

Field Competitions.

64. The usual field competitions were not held during the year on account of the Jubilee Agricultural Exhibition but special pure line seed competitions were organised in the Berbice, East and West Demerara Districts. These competitions were strictly confined to the private seed farms organised in 1934 for the propagation of pure line seed padi of varieties Demerara Creole and No. 79.

Anna Regina Estates and Bush Lot Land Settlement.

65. The Anna Regina Estates continued to be under the control of the lessee, Mr. Parikhan Rai, who has leased them for three years. The upkeep of the estates was fair. In consequence of the great difficulty experienced in collecting outstanding debts due to Government by tenants on the Anna Regina Estates, prior to the leasing of the properties, negotiations were entered into with the lessee of the estates for the sale of these debts to him at a discount, that is to say, for 25 per cent. of their total value.

66. The health of the Bush Lot settlers may be considered as normal for the year under review. Two crops of rice were grown this year: the spring crop was seriously affected by bad weather but the autumn crop was a good one. Both crops were sold to the lessee of the Anna Regina Estates.

67. A statement of the revenue collected from the Anna Regina Estates and Bush Lot Land Settlement is given hereunder.

General ...	...$	43 48	
Rice Bed Rents ...	...	41 86	
Pasture and Provision Farm Rents	...	4 65	
Lease of the Anna Regina Estates	...	2,800 00	
Sale of Anna Regina book debts		826 58	$ 3,716 57
Bush Lot Rents ...	...		1,558 95
Sale of Scrap ...	...$	946 89	
Miscellaneous ...	...	44 13	991 02
Refund of Advances--Bush Lot Settlers	...		363 99
Interest on settlers' advances	...		72 33
			$ 6,702 86

Census Returns.

68. Tables X. and XI. show the number of acres under cultivation during 1935 in the three counties of the Colony and also summaries for the period 1926—1935. Table XII. shows the returns of livestock in the Colony for 1935.

TABLE X.

CROP ACREAGES IN BERBICE, DEMERARA AND ESSEQUIBO COUNTIES, 1935.

Counties.	Nature of Crops and number of Acres under cultivation on December 31, 1935. (English acres).								
	Sugar Cane.	Rice.	Coconuts.	Coffee.	Cacao.	Rubber.	Limes.	Citrus and Other Fruit.	Ground Provisions.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Berbice ...	23,504	32,971	3,660	4	151	...	498	320	3,028
Demerara ...	43,884	26,513	13,449	1,661	491	655	1	227	7,785‡
Essequibo ...	526	11,398	4,677	2,386	201	24	195	109	2,433
Total ...	67,914*	70,882†	21,786	4,051	843	679	694	656	13,246

* Includes area under farmers' canes—2,207 acres.
† Does not include acreage for the Spring Crop—12,684 acres—which is grown on the same land.
‡ Decreased acreage due to the fact that some areas damaged by the 1934 floods have not been re-established, principally in East Demerara, where there has been an extension of cane farming.

TABLE XI.

SUMMARIES OF CROP ACREAGES—1926-1935.

	Year.	Annual Summaries of the Acreages under cultivation during the years 1926-1935 together with th acreages reaped for the same period for sugar-cane and rice. (English acres).											
		Sugar-Cane.		Rice.		Coconuts.	Coffee.	Cacao.	Rubber.	Limes.	Citrus and Other Fruit.	Maize, Plantains, etc., and Ground Provisions.	Total area under cultivation.
		Area cultivated.	Area reaped.	Area cultivated.	Area reaped.								
British Guiana	1926	58,589	55,728	34,701	52,117	27,880	5,499	1,356	2,104	689	...	15,264	145,885
Do. ...	1927	59,271	56,534	39,283	53,052	29,235	5,546	1,322	1,895	705	...	14,576	151,833
Do. ...	1928	57,625	53,489	46,667	58,449	29,456	6,201	1,265	1,683	695	...	16,336	159,928
Do. ...	1929	57,247	56,126	55,745	66,742	29,456	6,212	1,514	1,474	635	...	14,283	166,566
Do. ...	1930	57,244	54,264	52,287	63,482	28,052	5,363	1,514	1,474	740	..	14,312	160,986
Do. ...	1931	61,097	54,999	77,478	83,492	22,882	4,899	953	827	747	254	17,575	186,712
Do. ...	1932	62,905	55,240	73,453	87,941	23,301	5,800	791	880	787	316	17,135	185,368
Do. ...	1933	63,093	55,811	72,161	87,125	23,452	4,630	797	681	869	328	16,635	182,646
Do. ...	1934	61,567	53,966	63,227	70,951	22,600	4,217	812	873	789	371	16,450	169,906
Do. ...	1935	67,914	59,932	70,882	83,566	21,786	4,051	843	679	694	656	13,246	178,544

TABLE XII.

LIVESTOCK RETURNS, 1935.

County.	Horned Cattle.	Horses.	Mules.	Asses.	Buffaloes.	Sheep.	Goats.	Swine.
Berbice	41,128	586	447	3,964	...	19,970	7,781	10,212
Demerara	29,741	414	1,042	1,551	59	5,796	3,241	9,242
Essequibo	6,232	29	38	644	2	1,514	1,139	1,776
Hinterland Savannahs ...	51,110	1,845	18	6	...	304	30	1,380
Total	128,211	2,874	1,545	6,165	61	27,584	12,191	22,600

RESEARCH AND EXPERIMENT.

Sugar.

69. The following members formed the Sugar Experiment Stations' Committee for the year:

Director of Agriculture—Chairman.
Mr. J. C. Gibson —Pln. Port Mourant, Berbice.
Mr. James Bee —Pln. Albion, Berbice.
Hon. M. B. G. Austin —Messrs. Curtis Campbell & Co., La Penitence.
Mr. A. Murison —Pln. Uitvlugt, W.C, Demerara.
Mr. R. E. Rhodes —Pln. Diamond, E.B., Demerara.
Mr. G. M. Eccles —Pln. Blairmont, Berbice.

70. Mr. W. H. Richards of Plantation Lusignan, East Coast, Demerara, and subsequently Mr. F. F. Ross of Plantation Rose Hall, Berbice, acted for Mr. J. C.

Gibson during his absence from the Colony. Mr. Jas. Sutherland of Plantation Ogle, East Coast, Demerara, acted for Mr. Bee during the latter's absence abroad.

71. An important collection of twenty-five varieties was introduced through the co-operation of the Central West Indian Quarantine Station at Trinidad. These varieties from Barbados, Cuba, India, Java, etc., will be used in the breeding work and tested as sugar producers under local conditions.

72. Germination of seedlings was not as satisfactory in 1935 as in 1934. Nevertheless 19,896 were basketed. A new departure is an attempt to accelerate the discovery of a cane suitable for the pegasse areas by growing a proportion of each cross in baskets filled with pegasse soil and eventually transplanting such to a pegasse field. No pegasse soil being available at the Central Station, the authorities of Plantation Diamond kindly co-operated by supplying sufficient soil of this type for the baskets. Arrangements have been made for the 1935 "pegasse" seedlings to be transplanted to a field at Plantation Uitvlugt on the West Coast of Demerara. 24,147 of the 1934 seedlings were basketed and 18,132 transplanted to the field. Among the latter are 98 Saccharum x Sorghum hybrids. These 1934 seedlings will shortly be undergoing their first selection.

73. Careful selection, based on habit, weight of stool and total solids in juice led to the extension of 563 out of 15,193 seedlings of the 1933 group transplanted to the field. A second selection among the 563, effected in a similar manner, led to the elimination of the greater portion and the retention of 55 for further testing. At the first selection close on four per cent. of the seedlings were chosen. By the time the second selection was made less than half per cent. of the original basketed lot remained in cultivation. The Zeiss refractometer has proved a valuable aid in work of this nature.

74. At the end of the year there were 116 varieties in replicated trials. This is a large number, but it has taken some time to work through the heavy arrears of inadequately tested canes which had accumulated. That the effort was worth while is, however, indicated by the finding of a few very promising seedlings such as D. 309/21, D. 628/21 and D. 927/22, and the discovery of some useful parents such as D. 666/18. However, it is now possible to concentrate mainly on the newer canes, and more than 70 per cent. of the seedlings in replicated tests were bred subsequent to 1927.

75. Twenty-six variety trials were reaped during the year. The varieties Diamond 10 and P.O.J. 2878 continue to show marked superiority to the standard D. 625 and planters are following the advice given to extend these two canes. A number of other Demerara and imported seedlings have given good results in the experiments. Such canes are now undergoing confirmatory tests prior to being definitely recommended. In the meantime there is an active demand for planting material of such canes as D. 11/28, D. 66/30, Co. 213.

76. Twenty-five manurial trials were reaped during the year. It is now established that the optimum doses of sulphate of ammonia for plant canes and first ratoons of D. 625 on the two main soil types are:

	On flood-fallowed frontland.	On Pegasse Areas.
Plant canes of D. 625 ...	2 cwt. S. of A.	6 cwt. S. of A.
First ratoons of D. 625 ...	4 „ „	4 „ „

77. There is some evidence that the variety P.O.J. 2878 may be able profitably to use heavier doses. Further data on this point and on the nitrogen requirements of D. 625 as second ratoons, should be available for the next report.

78. It is now a standard practice to rest the heavier frontlands clays and silts

after a three to five-year crop cycle by flooding them with water for periods varying from a few months to two years. There is some difference of opinion as to the effect of depth of water, the absence or presense of aquatic vegetation, the increment due to prolonging the flood-fallow period, etc. With a view to throwing some light on these questions some field operations have been started (*vide* previous reports) and results from the plant canes and first ratoons reaping of one and from the plant cane reaping of another are now available.

79. These results indicate that:

(1) Flood-fallowing is more advantageous than grass fallowing on frontland soils;

(2) The depth of water is not a major factor;

(3) A heavy growth of aquatic vegetation, subsequently incorporated with the soil can have a beneficial effect (5-6 tons of cane per acre) on the first ratoon crop;

(4) The addition of five tons of molasses per acre to the flood water may give a plant cane increment sufficient to pay for the molasses and a residual first ratoon increment of about the same order (5-6 tons of cane);

(5) In the plant canes, a six-month flood-fallow gave about 12 per cent. increase over a four-month, whereas a twelve-month flood-fallow only gives about 12 per cent. increase in yield of a six month.

Comfirmation of these findings is being sought through further trials.

80. A free grant of £1,500 has been provided from the Colonial Development Fund for the continuation of sugar research work for a further period of two years as from October 1, 1935. This grant is a continuation of the previous one from the Fund which expired on September 30, 1935, and will enable the completion of valuable experiments particularly with manures and varieties, one year's work on which was almost entirely lost owing to the 1934 floods.

Rice.

81. At the Central Rice Station, Georgetown, 26 varieties were subjected to replicated trials, including twenty new varieties obtained by hybridisation or selection. Three manurial trials and a double transplanting trial were also carried out. The number of varieties tested at the Experiment Station, including imported varieties and selections from local cultivations, is 296, of which 240 are still under observation, the remainder having been discarded.

82. At Henrietta Sub-station, Essequibo, the results of making single plant selections from the variety Blue Stick are becoming apparent. Several strains have been isolated, some of which are distinctly earlier than the ordinary Blue Stick. In addition to this strain trial, a variety trial, spacing trial and different ages of seedling trials were laid down.

83. A necessary phase of the varietal programme is the testing of the most promising varieties in the districts before they can be recommended for extension. Replicated trials were, therefore, laid down at the following sites which were chosen as being representative of the various conditions under which rice is cultivated.

Berbice	...	...No. 63, Corentyne.
		Pln. Whim, Corentyne.
		Pln. Brahan, West Coast.
Demerara	...	...Pln. Hope, East Coast.
		Central Rice Station, Georgetown.
		Vreed-en-Hoop, West Bank.
Essequibo	...	...Pln. Sans Souci, Wakenaam.
		Pln. Henrietta, Essequibo Coast.

84. The trials at No. 63 and Pln. Brahan were broadcast on unirrigated land, while the remainder were transplanted on irrigated land. In each trial the varieties No. 79 and Demerara Creole were included as standards, and wherever possible local types were included for comparison with the pure lines.

85. The results of these trials are summarised in the table below, in which the mean yields of the various varieties are expressed as percentages of the Demerara Creole mean yield. An asterisk denotes that a variety has appeared in three or more trials.

Variety.	No. of Trials.	Average Yield per acre compared with Demerara Creole (100.0)
D. 116	1	135.0
Karimganj	1	131.0
D. 115	2	122.0
D. 114*	6	116.3
D. 97	1	112.7
D. 91	1	110.3
D. 89	1	109.5
Local Type (Wakenaam)	1	109.5
D. 99*	3	108.8
D. 110	1	107.7
Kalyaman*	5	107.5
B. 13	1	107.3
H. 6	1	107.1
No. 79*	9	105.0
Local Type (Leguan)	1	104.9
D. 88	1	104.1
B. 6	1	100.2
No. 75	2	100.1
Demerara Creole*	9	100.0
D. 92*	3	99.9
No. 78*	6	99.6
B. 8	1	99.2
Blue Stick*	8	99.0
B. 1	1	98.2
B. 2	1	93.0
B. 4	1	90.7
C. 4	1	89.5
Minalabon	1	82.4

86. D. 114, D. 115 and D. 116 are practically identical and resemble very closely the Carolina type of grain. Karimganj, a recently imported variety from Mandalay, has proved very successful but the grain is too short to be of commercial value. It is, however, being used in crosses with D. 114 and Demerara Creole. D. 97 and D. 99 are varieties of the No. 79 type and show promise of being better than No. 79 in yield.

87. Attention has recently been focussed on the Seta Patna types by the increased demand for this type of rice on West Indian markets. D. 91, D. 89 and Kalyaman are the best varieties of this type and D. 110, which has a slightly shorter grain, also shows promise.

88. The first manurial trial to be described is a continuation of the experiment reported in the 1934 administration report and was designed to discover the optimum growth stage at which to apply sulphate of ammonia and superphosphate of lime. The ten treatments were as follows:—

Treatment No.	Fertiliser applied per acre.	Growth Stage.
1	Control	
2	2 cwt. Sulphate of Ammonia	At transplanting.
3	2 cwt. superphosphate	
4	2 cwt. Sulphate of Ammonia +2 cwt. superphosphate	
5	2 cwt. Sulphate of Ammonia	30 days after transplanting.
6	2 cwt. superphosphate	
7	2 cwt. Sulphate of Ammonia +2 cwt. superphosphate	
8	2 cwt. Sulphate of Ammonia	Applied ¼ at transplanting; ½ 30 days after; ¼ just before flowering.
9	2 cwt. superphosphate	
10	2 cwt. Sulphate of Ammonia +2 cwt. superphosphate	

89. The mean yields observed in lb. per acre are shown in the table below:—

	Manure.	Growth Stage.			Means for manures.
		At Transplanting.	30 days after transplanting.	¼, ½, ¼	
No Sulphate of Ammonia.	No Superphosphate ...	...	...	...	1975
	Superphosphate ...	2265	2000	2420	2228
Sulphate of Ammonia.	No Superphosphate ..	2255	2510	2415	2393
	Superphosphate ...	2455	2610	2680	2582
Means for Growth Stages ...		2325	2373	2505	..

90. The results, although not very conclusive, indicate that sulphate of ammonia is best applied 30 days after transplanting, while the superphosphate is best applied in small doses during the period between transplanting and flowering. In no cases did the increase in yield cover the cost of the fertiliser.

91. The second manurial trial was put down as a result of a small experiment carried out in 1933–1934. In this preliminary trial a few plots which had received a dressing of green manure the previous crop were treated with artificial fertilisers at the rate of 2 cwt. sulphate of ammonia, 2 cwt. superphosphate and 2 cwt. sulphate of potash per acre. Considerable increases in yield were obtained. A properly designed experiment was laid down in 1935 and will be continued in 1936. The treatments are as follows:—

Treatment No.	1935.	1936.
1	Control	
2	Green manure 2 tons per acre.	Residual effect only.
3	Green manure 2 tons per acre.	Residual effect + Artificials.
4	Green manure +Artificials (2 cwt. sulphate of ammonia +2 cwt. superphosphate per acre).	Residual effect only.
5	Artificials only.	do.

92. The mean yields observed in the first phase of the experiment are shown in the table below :—

Treatment.	Padi lb. per acre.
1 Control	1,848
2 Green Manure	2,148
3 Green Manure	2,080
4 Green Manure + Artificials	2,672
5 Artificials only	2,604
Significant Difference (P=O. 05) ...	206

All manurial treatments gave a significantly higher yield than the control.

93. The third manurial trial was a preliminary experiment to test the value of applying molasses on rice. The treatments were :—

1. Control.
2. Molasses—5 tons per acre.
3. Molasses—5 tons per acre + Sulphate of Ammonia and Superphosphate (25 lb. of each per acre).

94. Only six plots were available for this trial so there were two replications of each treatment. The mean yields observed are set out below :—

Treatment.	Padi lb. per acre.
1	2,000
2	2,940
3	3,040

Although the increases in yield were very large, the cost of the molasses is at present prohibitive. A more extensive trial on similar lines will be laid down in 1936.

95. The policy of importing new varieties in addition to selecting from mixed peasant cultivations and hybridisation has been continued and results to date indicate that a number of varieties are now available which are better than the old standard types.

96. Varieties introduced from other countries are rarely immediately successful but pass through an acclimatisation period of several years. The variety Karimganj, obtained from Mandalay in October, 1933, however, produced very good results in one of the 1935 variety trials. but the grain is too short to be of commercial value. A number of high yielding varieties has been obtained by selection from local cultivations, chief among which are D. 89, D. 91, D. 97, D. 99, D. 110 and D. 114.

97. Two generations of hybrid progeny of the crosses Americano 1600 x Demerara Creole, Mexican Edith x Demerara Creole, and Kristnakatakulu x No. 79, were grown during the year. The majority of strains obtained from the first two crosses bred true at the seventh generation and the best strains were tested in randomised trials against standard varieties. The third cross has now reached the sixth generation and the selected strains are approaching homozygosity.

98. Experiments in connection with the control of the rice weevil have been conducted during the period under review and details are given in para. 141.

Minor Crop Improvement.

99. Improvement work in connection with minor crops such as pigeon peas and peppers has been confined to the importation of new types and the sorting out and testing of the available types in the Colony. A comprehensive collection of cassava varieties is being made from the various districts. The collection at the Experiment Station has been used as a basis for the classification of these types and

preliminary yield trials are in progress. Onion seed is imported annually from Teneriffe for distribution to farmers. A search has been made for a variety which will produce viable seed under local conditions, but has, so far, not met with success.

100. It is felt that more attention might be paid to the cultivation of papaws and trials have been conducted with a number of imported and local varieties. One of these, a small fruited variety of excellent flavour obtained from Panama, has been crossed with a large fruited local variety of average quality. When the local variety is used as the female, the resultant F_1 plants bear large fruits of excellent flavour. In the reciprocal cross, however, the two undesirable characters, small fruit and poor flavour, are combined. The latter cross has, therefore, been discarded, while the former has been back-crossed with the original male parent.

101. Demonstration plots with the various vegetable crops have been conducted at the sub-stations during the year. From trials conducted by the Department it appears that certain types and varieties of vegetables do well under local conditions and farmers are advised to consult their District Officers in this regard. This work was summarised in an article entitled "Hints on Vegetable Culture" published in the *Agricultural Journal of British Guiana.*

102. A new fodder was introduced during the year from Messrs. Sutton & Sons, Calcutta, India, namely "Teosinte," which grows very rapidly and luxuriantly and should prove a useful crop for keepers of dairy cows. During the year 7,250 cuttings of the various fodder crops were distributed.

Poison Plants.

103. The White Haiari under cultivation at Wauna sub-station, North West District, flowered during the year, and was subsequently identified at Kew as *Lonchocarpus Nicou* (*Aubl.*) D.C. showing it, therefore, to be conspecific with the Cubé of Brazil. Unfortunately, however, the poison content of the local Haiaris appears to be low, and a large sample sent by a commercial agent to New York for analysis gave disappointing results. The Department is now carrying out further analyses to test the possible insecticidal value of the Haiaris and other fish poison plants, and is examining the possibility of increasing the poison content by suitable soil treatment. It is uncertain at present whether the low poison content of the local *L. Nicou* compared to that found in other parts of South America is due to environmental conditions, or to its being a different variety or strain of the species.

Citrus.

104. The distribution of budded plants from the Botanic Gardens was continued and further assistance was rendered to those planters and farmers who ran their own nurseries.

105. A very good crop of grapefruit was borne by the experimental orchard at Hosororo, North West District, the majority of the fruit being sold to firms in Georgetown who subsequently retailed it to their local customers. A small sample of grapefruit was sent to the British Guiana Fruit and Canning Company for canning purposes. The result was promising and the canned fruit of good flavour.

106. Table XIII. indicates the distribution of citrus plants during the period 1933–1935 ; the total distribution from 1928–1935 amounts to 32,020 plants. This does not take into account plants raised in private nurseries.

Table XIII.

DISTRIBUTION OF CITRUS—1933-1935.

	Demerara.			Berbice.			Essequibo.			North West District.			Total Distribution.			Total Distribution. 1930-1935.
	1933.	1934.	1935.	1933.	1934.	1935.	1933.	1934.	1935.	1933.	1934.	1935.	1933.	1934.	1935.	
Budded Oranges	1,524	216	73	216	51	43	132	534	11	600	176	134	2,472	1,124	261	5,507*
Budded Grapefruit ...	709	353	72	427	66	37	22	245	6	224	114	197	1,382	778	312	5,122*
Budded Limes...	...	...	...	...	...	...	...	...	...	497	426	100	497	526	100	4,504
Seedling Limes.	...	...	...	...	...	...	...		...	268	236	...	268	236	...	16,485
Total ...	2,233	816	145	643	117	80	154	779	17	1,589	952	431	4,619	2,664	673	31,518*

*During 1928 and 1929 a total of 502 budded oranges and grapefruit were distributed but not listed separately, making a total of 32,020 plants.

Coffee.

107. In the Department's nurseries, coffee seedlings are grown from selected trees and sold to farmers at a nominal price. On account of low prices prevailing and the consequent attitude of farmers to restrict rather than extend cultivation, the demand for seedlings was not great during the year.

Tobacco.

108. Seed of selected varieties tried at the Department's Experiment Stations was distributed. On account of the attractive prices being offered locally for "bright leaf" tobacco, requests for seed were not for the heavier type of leaf which was in demand two or three years ago, but for varieties such as "Hickory Pryor," "White Burley," etc.

109. Mosaic was observed in numerous cases especially where ratoon and second crops were grown on the same area. The District Agricultural Officers continued to give advice in regard to the culture of the crops and its preparation for market.

Beekeeping.

110. The work at the Department's Demonstration and Queen-breeding Apiary was still concerned chiefly with the breeding and distribution of mated queens bred from imported Italian stock. 102 queens, including five replacements were distributed during the year, compared with 92 in 1934, 53 in 1933 and 49 in 1932. In addition, 19 nucleus hives were distributed to persons desiring to make a start in beekeeping. The supply of these hives was made possible through the provision by Government of a revolving fund for the purpose.

111. The weights of the scaled hives continued to be taken daily throughout the year and distinct seasonal fluctuations can already be distinguished.

112. The demonstration service given by the Apiary continued to be appreciated and many visitors, particularly beginners, were given first-hand information in regard to equipment and general handling of bees.

113. The extension work, in close collaboration with the British Guiana Beekeepers' Association, continued to give encouraging results. Two major advertising projects were launched during the year and a remarkable increase has taken place in the quality of honey produced, the presentation of honey for market and the purchase of honey by local consumers. At the end of the year it was planned to undertake increased activities in the extension service with the help of lantern slides.

114. To safeguard against bee diseases, legislation was enacted towards the end of the year to control the importations of honey, bees and all beekeeping equipment which had previously been in use.

Bananas.

115. The possibilities of organising an export trade in bananas were further explored by the despatch of a trial shipment of Cavendish and Gros Michel bananas on the Harrison Line steamer s.s. "Ingoma." This steamer possesses no proper chilling system for fruit, but space was provided in one of the cold chambers used for the storage of perishable goods, and an improvised arrangement was made whereby the stale air could be withdrawn periodically. Most of the fruit was obtained from the West Bank and Canals Polder, and had of necessity to be handled several times in its journey from the field, *via* lorry and punt, to the ship's hold. Under these somewhat unfavourable conditions—the best available however—the fruit reached London in a rather better condition than might have been expected. The Cavendish bunches and some of the Gros Michel were bagged, but the majority of the Gros Michel travelled naked. One or two crates of separate hands and fingers of Cavendish were also despatched for trial. The size of the bunches provided for shipment—120 in all—was on the average poor. The condition of the fruit on arrival was as good as could be expected, but better methods of handling and cooling on the voyage were obviously required. Finally, the prices obtained, after deduction of the freight charges, left no margin of profit whatsoever. The venture in fact did not augur well for the establishment of an export trade in bananas.

116. During the year Mr. Dunlap of the United Fruit Company paid another visit to the Colony, and during his stay visited the privately owned trial plantation of Gros Michel bananas at Dunoon on the Demerara River. The stand was found to be uneven and many of the bunches below 'count' and though a medium crop might be obtained the first year from his experience of similar conditions elsewhere, Mr. Dunlap doubted whether the ratoon crops would succeed. A case of Moko disease was observed on the estate. Mr. Dunlap also considered that the production of these plots and the rate of spread of disease should be carefully watched during 1936, before any further considerable extension of cultivation was attempted. In the meantime he thought there was not a sufficient quantity of fruit to justify any arrangements being made in respect to organised marketing.

117. The United Fruit Company were also approached with regard to the possibility of entering into an agreement for the marketing of Gros Michel bananas from this Colony. They considered, however, that as the possibilities of growing the Gros Michel in British Guiana on a large scale were not at present very promising, they would not be justified in actively encouraging the outlay of the capital and effort involved in the development of an industry which they feared could not be undertaken with a reasonable assurance of success. Nevertheless, should the time arrive when British Guiana had a reasonable quantity of good saleable bananas of the Gros Michel variety available for export they would then consider entering into some arrangement for its marketing.

Experimental Shipments of Fruit.

118. In addition to the trial shipment of bananas referred to above, small trial shipments were also made with mangoes and limes, the former to Canada and the latter to London. The mangoes despatched were 'Buxton Spice' and as the mid-year crop was rather a poor one, some difficulty was experienced in obtaining sufficient fruit even for the four crates packed, the fruit being on the small side, and some of it rather too ripe for shipment. The mangoes, however, reached Montreal in fair condition, but the agents there were emphatic that the market for this type was a very poor one, and strongly advised the shipment of the 'Julie' variety in future. The Department has already made successful shipments of 'Julies' and hopes to repeat these in due course. It is important, however, that any individual desirous of shipping this fruit abroad should do so under the guidance of the Department. One shipment of poor fruit despatched privately to Canada has already

given a bad name to the Colony's mangoes, and at this stage it is essential, in order to obtain the goodwill of the purchasers, that only fruit of the best quality be sent, packed with every possible care.

119. The limes, which were obtained from Messrs. Davsons, were despatched when it was hoped that the war in Abyssinia might have bettered the marketing possibilities for these fruits in England. The price obtainable, however, was not encouraging, but the shipment provided a useful experience. The report on the fruit showed the necessity in future for very careful grading as to size, and closer packing than had been employed in this case, to allow for the considerable shrinkage which occurs on the voyage from loss of moisture.

Cacao.

120. The observations on trees apparently immune from witchbroom have been continued, but only one of the marked trees has proved free of the disease so far, and this probably because there is no heavy infestation in its immediate neighbourhood. Inoculation experiments will be carried out on this tree in due course.

Seed and Plant Exchange.

121. The usual exchange of seed and plants was carried out during the year and we are especially indebted to Mr. David Barry of Los Angeles and the Coconut Grove Palmetum, Florida, for palm seed and plants. An assortment of seed was also kindly sent us by the United States Department of Agriculture. Seed of *Aleurites fordii* and *A. montana* was obtained from several independent sources, and we are grateful to the Palestine Department of Agriculture for a selection of pomegranate cuttings which reached us in very good condition. Two plants of the Violet Tree, *Phlebotaenia Cowellii*, received from Puerto Rico, were planted in the Gardens. Dr. Archer of the United States Department of Agriculture, who visited us in 1934, has from time to time sent us seed during his travels in Central America. A selection of chrysanthemums was received from the Canadian Department of Agriculture and a number of lily bulbs from the Bermuda Department. Several private individuals also have sent us interesting collections of seed on an exchange basis. Three varieties of papaw were received from the Queensland Acclimatisation Society, Lawnton, two from British Honduras and two from the Department of Agriculture, Trinidad. Pigeon peas have been sent us from the Central Provinces, India, while a small quantity of the white pigeon pea and white cowpea was obtained from the Imperial College of Tropical Agriculture. The Central Experiment Farm, Ottawa, forwarded four varieties of soya bean, while cinnamon seed was received from the Royal Botanic Gardens, Peradeniya, Ceylon. Onion seed has been received from Poona and Teneriffe, and we are indebted to the Hawaiian Experiment Station for seeds of Algaroba or Kiawe. Twenty-five varieties of cane were received from the Plant Quarantine Station, Trinidad.

122. The Department has sent a large assortment of seed to various interested persons and to other agricultural bodies. Requests for cuttings of the Haiaris have been especially numerous.

Plant and Seed Distribution.

123. The following is a list of the planting material distributed locally by the Department during 1935, and the total distributions from 1928–1935.

	Distribution 1935.	Total Distribution 1928–1935.
Sugar cane	...486,200 cuttings.	1,866,978 cuttings.
Padi (Seed)	...214,760 lb.	1,207,069 lb.*
Padi (Seedlings)	... ...	260,000

*Exclusive of 679,560 lb. distributed in 1934-35 for flood and drought relief measures.

	Distribution 1935.	Total Distribution 1928–1935.
Plantains ...	44 suckers.	4,123 suckers.
Bananas ...	68 „	10,260 „
Papaw (Seed)	6¼ oz.	8½ lb.
„ (Seedlings)	736	3,740
Grape Vine	68	220
Tobacco (Seed)	6 lb.	21¾ lb.
„ (Plants)	102	1,652
Legumes (Cover Crops)	18½ lb.	1,958 lb.
Peas and Beans (Edible)	256 „	2,370 „
Soya Beans	6½ „	495¾ lb.
Fodders (Various)	7,250 cuttings.	60,276 cuttings.
Onion (Seed)	30 lb.	413 lb.
„ (Seedlings)	38,421	119,671
Tomato (Seed)	14¾ oz.	18¾ lb.
Tomato (Seedlings)	2,829	17,962
„ (Cuttings)	...	92
„ (fruit)	400 lb.	664 lb.
Ground Nuts	...	406 „
Sorghums	...	50 „
Eschallot ...	...	25¼ lb.
Cabbage (Seed)	...	7¾ „
„ (Plants)	...	862
Jerusalem Artichoke	...	238 lb.
Indian Kale	...	230 suckers.
Boulanger (seed)	...	7 oz.
„ (seedlings)	15	132
Ginger ...	...	... 3¼ lb.
Sweet Corn	2½ lb.	2¾ lb.
Broom Corn	...	74 lb.
Jute ...	...	3 „
Vegetable Seed (Assorted)	6 lb.	27 lb.
Chilli (Seed)	...	96 lb.
„ (Seedlings)	...	2,396
Seed Coconuts	6	24
Sweet Potato (cuttings)	6,972	200,095
„ „ (tubers)	360	11,110
„ „ lb.	...	18 lb.
Cassava	350 cuttings	21,070 cuttings.
Ground Provisions (Eddoes, Tannias, Dasheens and Chinese Yams)	...	1,206 lb.
Pineapple...	...	472 suckers.
Krowa ...	12 suckers	37 „
Orchard Crops.		
Citrus (budded)—Oranges	261 plants.	5,607 plants.*
Citrus (budded)—Grapefruit	312 „	5,122 „ *
Limes (budded)	100 „	4,504 „
Limes (seedling)	...	16,485
Coffee (Liberian)	25 seedlings.	12,362 seedlings.
Coffee (Arabian)	...	1,438 „
Cacao ...	3,042 seedlings.	7,932 „
Cacao (pods)	100	100

*Exclusive of 502 plants of budded oranges and grapefruit distributed in 1928 and 1929 but not listed separately.

		Distribution 1935.	Total Distribution 1928–1935.
Mangoes (Grafted)	...	121 plants.	549 plants.
Pears (Grafted)	...	33 „	313 „
Sour Orange (Seeds)	...	8,000	8,000
Nutmeg (seedlings)	...	15	313
Other Economics	...	829 plants	7,653 plants.

Botanic Gardens and Nurseries.

124. The weather throughout the year was favourable and the beds and borders were maintained in good order. Planting of new palms, shrubs, trees, etc., was continued in the Front Gardens and Avenue. Considerable progress was made with the laying out of the area around the head office building. In the nurseries the output of ornamental and economic plants was continued as usual. A large number of budded citrus plants was raised for sale to farmers and others, and assistance given by the members of the nursery staff to those persons who have started their own citrus nurseries. The usual grafting of mangoes to provide plants for sale was carried out, and now that the collection of grafted trees at the Experiment Station are coming to maturity it will be possible to increase the output of these plants. A number of grafted pears was also raised to fulfil orders received.

125. The old stable was pulled down and a new building erected by the Public Works Department to house the donkeys and carts. A small orchard was laid out at the end of the Chemistry Laboratory compound to take new introductions of fruit trees, etc. The annual exchange of plants and seeds was carried out and resulted in a number of new introductions.

Livestock.

126. The Government Veterinary Surgeon accompanied the Assyrian Commission to the Rupununi District and returned on January 18, 1935. He was also absent on long leave from March to July. During his absence, Mr. H. A. Fraser, B.V.Sc., acted as Veterinary Surgeon. During the year poultry operations were continued at the Stock Farm and one trio of Rhode Island Reds and one trio of White Leghorns have been added to the section. 46 young stock and 3,490 eggs were sold during the year. There was an increase in the number of pigs sold this year but this does not denote a greater interest in pig-keeeping. Great difficulty was experienced in getting rid of the 63 young stock and indeed, several had to be kept to an age when they would have realised the same price had they been sold for pork in the local market. The distribution of stock at the Government breeding stations was as follows :—Georgetown ;—7 Holstein-Friesian bulls, 2 Guernsey bulls ; 2 Holstein-Friesian cows, 2 heifer calves, 1 bull calf and 2 creole heifers ; 2 boars and 5 sows (Canadian-Berkshire breed) ; 3 pens poultry and 4 pens ducks and 1 jack donkey ; Leguan :—1 Guernsey Bull and 2 pens poultry ; Forest Station :—1 Holstein-Friesian bull. The number of cows brought for service to the Stock Farm was 365 while the record of the Guernsey bull at Leguan showed that from 110 cows served 102 calves—79 heifers and 23 bulls—were dropped.

127. At the end of the year the extension of a 30-acre block at the Georgetown Stock Farm was being contemplated in order to supply improved breeding stock for the Colony, and also the fencing and dividing into paddocks of land at La Belle Alliance for the purpose of an agistment area for cattle belonging to residents in Essequibo, together with the establishment of a breeding station consisting of three dual purpose bulls.

Chemistry.

128. During the early part of the year a survey of the agricultural possibilities

of the Rupununi District and the Pakaraima Range was concluded and a report published in the Agricultural Journal (Vol. VI. No. 4 pp. 155–184). The survey was undertaken in connection with the possible settlement of Assyrians in this area. The greater part of the area presents no agricultural possibilities and few signs of cultivation are to be seen. At present farming is conducted under a system of shifting cultivation in forested areas while certain crops are produced in disused cattle corrals. There are a few limited areas of good agricultural soils which would support continuous cultivation, but even on these areas the farmer does no weeding or forking and finds it simpler to clear a fresh area of bush rather than keep his original cultivation clean. It is interesting to note that the areas of good agricultural soil encountered always occurred in the foothills and valleys of mountain slopes or northern or north-western aspect. Such areas are to be found in the Kanaku Mountains, the Kusad Mountains, the Shiriri Mountains, the mountains of the Kurasabi Reserve and possibly the Annai Hills. The greater part of the Pakaraima Range appears to be unsuited to permanent agriculture. There are, however, isolated patches of exceptionally fertile soil.

129. The Chemist, during leave, represented the Government of British Guiana at the Third Conference of the International Society of Soil Science held at Oxford and subsequently proceeded on the post-congress tour.

130. The work of the Division has consisted of advisory work in connection with the soils of the coastal belt and/or the interior. It has also been concerned with the chemistry of crop production. In all, 3,791 samples have been examined by the Chemical Division during the period under review. These samples comprise 2,774 sugar cane, 924 soils and 93 miscellaneous samples, the latter including specimens of resins, waters, factory scales, sludges from water purification plants, molasses and fermented wash. During the year the Chemist was consulted by a sugar firm as to the factory results obtained on their estates. Some time has been devoted to the laboratory examination of certain aspects of the problem of flood-fallowing and the results indicate that increases in 'available' iron are connected with the improvement in soil texture which plays an important part in securing yield increases. Determination of the index of hardness of a large number of composite samples of sugar-cane soils have been completed. A considerable amount of time has been devoted to the design of field experiments with sugar-cane and the statistical treatment of the results obtained. Towards the end of the year a large scale factory trial of sodium aluminate as a clarification aid for cane sugar juices was undertaken by one of the Colony's estates. A member of the Chemical Division was seconded for a fortnight to conduct special analyses of factory products during the trial.

131. The pineapple canning industry continued to receive assistance from the Division in regard to the examination of fruit from the various plots of the fertiliser experiment. In addition a pot experiment concerned with the uptake of nutrients by pineapple plants was completed during the year.

132. Following the interesting work in Trinidad on the manurial requirements of grapefruit a certain amount of preliminary work was carried out in connection with the grapefruit cultivation at Hosororo Experiment Station, North West District. The results obtained supported the conclusions reached in Trinidad and modifications are being made in the manurial applications to various trees for demonstration purposes.

133. Work was commenced on the isolation and estimation of the insecticidal substances contained in local fish poisons. Root samples of the Haiaris (*Lonchocarpus Nicou*) have been examined and the technique for their analysis is being acquired.

Plant Pathology and Botany.

134. There were no serious diseases of crops reported during the year under review.

135. A disease of 'Blue Stick' rice occurred on the islands of Wakenaam and Leguan. It was caused apparently by *Sclerotium oryzae* Catt. which fungus was found in constant association, and the symptoms, empty grains and excessive tillering, agree with those ascribed to attacks of this fungus in other parts of the world. The most notable feature of the disease was its confinement entirely to 'Blue Stick' plants raised from seed obtained during the year from Henrietta Rice Station in Essequibo. It was never found on 'Blue Stick' which had been grown for several generations in the islands and had never been reported at Henrietta, so that it seems probable that the change of environment rendered the rice susceptible to a fungus which normally does very little damage. *Sclerotium rolfsii* Sacc. was also found associated with the diseased plants in one case, but was only present as a saprophyte. The problem is being followed up during the present year.

136. Moko Disease was observed on plantains and bananas on the Demerara River and Cercospora leaf spot on Gros Michel bananas on the Demerara and Berbice rivers. This latter disease, though at present only occurring sporadically in the Colony, will be kept under observation owing to the serious damage that it is causing in Surinam.

137. The White Haiari under cultivation at Wauna sub-station flowered during the year for the first time, and specimens were identified at Kew as *Lonchocarpus Nicou* (Aubl) D.C. It remains to discover by analysis how the poison content of this Haiari compares with the conspecific varieties found in other parts of South America.

138. A beginning was made during the year to classify the large number of cassava varieties found in the Colony. It is apparent that in many cases the same variety is grown under several names in different districts.

139. The routine work of the Herbarium was continued and a large quantity of seed was collected and despatched in response to various requests. A further number of unnamed sheets, including duplicates of specimens collected by Dr. Archer during his visit to the Colony the previous year, were forwarded to Kew and there determined. A large number of sheets in the Herbarium representing specimens from countries outside the Colony were also sent to Kew.

Entomology.

140. An outbreak of the Coconut Caterpillar (*Brassolis sophorae* L.) occurred on several estates on the East Coast. As has previously been pointed out there is distinct periodicity in regard to the outbreaks of this pest, in some years the damage being relatively small and in others of major importance. For the year under review the attacks were not widespread. Until growers cooperate more effectively to make it difficult for the pest to breed in large numbers there is every indication that intermittent outbreaks will occur. Growers have been made fully cognisant of the necessary sanitary practices. In this connection the Plant Diseases and Pests (Prevention) Ordinance has recently been enacted and should be distinctly helpful. It provides *inter alia*:

> "... the Director or any person authorised by him in writing for that "purpose may issue an order in writing ..... to the owner or "occupier or the person in charge of any nursery or land requiring "him to do within a fixed time from the service of such order, to be "specified therein, such acts as may be stated in the notice for the "eradication or for the prevention of the spread of any pest or

" disease, including the total destruction of any plant whether affected " by disease or pest or not."

141. The principal insect involved with respect to milled rice in storage is the rice weevil, *Calandra oryzae.* This insect, from a commercial point of view, almost totally ruins rice in less than six months. Due to the rather primitive methods of storage practised in the Colony the usual control measure for this insect—fumigation—is not practicable. The problem of combating the pest by other ways has, therefore, been engaging the attention of the Entomological Division for some time and the most promising line of investigation so far discovered is the use of dusts mixed with the grain. Powdered chalk or calcium carbonate has proved the most economical and useful of the different kinds experimented with, and the results, after ten months, showed that this substance acts as a marked deterrent. Experiments along the same lines have been laid down at Plantation Hope and at the Department's bond at Golden Grove, with respect to the two most destructive pests of stored padi, namely, the beetle, *Tribolium castaneum* and the moth, *Sitrotroga cerealella,* both of which are responsible for very considerable damage to stored padi.

AGRICULTURAL EDUCATION.

Jubilee Agricultural Exhibition.

142. The Jubilee Agricultural Exhibition was opened by His Excellency the Governor on Thursday, April 25, and lasted two days. Widespread organisation plans and propaganda work, undertaken by the officers of the Department in their Districts, resulted in what was generally regarded as one of the most successful exhibitions staged in the history of British Guiana. Approximately 4,000 exhibits were submitted and about 5,000 visitors attended. The Exhibition was held in the Promenade Gardens, Georgetown, and the exhibits were housed in temporarily erected stands. The sugar stand was original in design and contained exhibits related to most phases of the industry. The Department of Agriculture stand was mainly instructional in nature. Its several divisions endeavoured to display, in a popular and readily understandable manner, the work with which they were concerned. There were a number of other stands in which were placed the exhibits for competition. The Department also leased space to individuals or firms for the advertising of articles related to agricultural industries. Among the most attractive of these latter stands were those by Messrs. Booker Bros. McConnell & Co., Ltd., (Hardware Department) for demonstrations with agricultural machinery, Messrs. Bookers' Drug Stores, the Sun Life Assurance Company, "Ovaltine" Manufacturers and the proprietors of Hope Estate displaying "Hope Products" such as copra, rice, etc. The great success achieved by this Exhibition bears testimony to the value of the educational work of the Department of Agriculture in the rural areas of the Colony during recent years.

School Gardens.

143. There are six registered school gardens in the Colony—two in each of the three counties. The work forms part of the schools' daily curriculum by arrangement with the Education Department. The Department supervises the agricultural activities in the gardens whilst the Education Department is responsible for the discipline of the teachers and pupils. Good work has been done by the pupils and excellent crops have been reaped. Seed obtained from Messrs. Sutton & Sons, Reading, England, and Messrs. Peter Henderson, U.S.A., have been distributed free to all gardens. Regular visits have been paid by the District Officers and instructions given.

144. Encouragement has also been given to various unaided school gardens by way of free distributions of seed and the District Officers have visited and given instructions whenever possible. The number of such is increasing.

Negro Progress Convention.

145. The Negro Progress Convention, a local organisation, organised for the promotion of the welfare of its members, has undertaken an agricultural educational project 20 miles up the Demerara River at Land of Canaan. Two students, financed by the Convention, were sent to the Tuskegee Institute, Alabama, U.S.A., and took a course of training, especially in applied agriculture and home economics. These students have now returned, after four years' training, and one has been placed in charge of the proposed agricultural holding. A small area has been cleared and a number of youths have taken up residence with a view to receiving practical instruction. The Department of Agriculture is working in co-operation with the Convention, and will continue to give all possible help in making this scheme a success.

Field Days.

146. A successful Farmers' Day was held at the Experiment Stations, Georgetown and the Botanic Gardens, on September 23, 1935. Those cane farmers who had been making sincere efforts to improve their yield by the introduction of new varieties had the opportunity of inspecting, at the Sugar Station, the comparative development of canes such as P.O.J. 2878, Diamond 10, D. 625, etc. At the Rice Station, the variety plots attracted attention and proved instructive. At the Livestock Farm, the Holstein-Friesian and Guernsey bulls were inspected as also were the pens of poultry, Canadian-Berkshire pigs, trials with various fodder crops, etc. In the orchard crop nurseries there were examined budded and grafted fruit plants at all stages. Officers of the Department were in attendance throughout the day and discussed various phases of the work in progress.

AGRICULTURAL ECONOMICS AND STATISTICS.

147. One of the effects of the period of sustained low prices has been to attract attention to the little that has been done in agricultural economic planning in comparison with, say, soil chemistry, plant breeding, pest control, etc. Although at the beginning of the present century a considerable amount of work had already been done and reliable information obtained in these latter spheres, we have only recently sought information as to what, for instance, is the most economic size of a farm. The need for collecting economic data locally had made itself felt and as as soon as a suitably trained officer became available, a start was made. The work begun in 1933 and 1934 was extended in 1935.

148. A system of weekly price recording for locally grown products on the domestic market has been maintained. These prices are of value, not only for record purposes, but to inform rural districts by telegram of price changes, so that growers are now provided with an independent check of sales reports submitted by market agents. There are also kept on record, quotations on the London market, reduced to an f.o.b. Georgetown basis, for the chief export products. These quotations are submitted regularly for Government's information.

149. There was also completed and published, a study of the seasonal variation in price of the Colony's agricultural commodities, and the periods at which shipments are made of major export products. In this study, attention was drawn to the periodicity of rice shipments and the competition of these shipments on the Caribbean markets with Burmese rice. Another study in seasonal variation connected with the employment of labour on sugar estates was made. The information in connection with the employment of labour should be of service, since seasonal fluctuation in labour supply and demand continues to be a problem of importance. A study was also made of the periods at which loans are made from and repaid to credit banks. Information in this connection was published in the Agricultural Journal.

150. The first economic survey undertaken in this Colony was completed at the end of the year. The survey covered the major cane-farming areas in East Demerara. Nearly 600 survey forms were completed and made ready for statistical analysis. This survey was planned on a not too extensive scale, its aim being to disclose certain fundamental economic relationships. Thus, it is intended to learn (a) what is the economic size of a cane farm ; (b) what is the best combination of farming enterprises ; (c) what is the relationship, under farming conditions, of cost of cultivation to profits and of cost of fertilising to profits, etc.

151. There was, in preparation, data covering the period 1911-36 on prices, cost of living and wages in the Colony. The primary object of the undertaking was to collect and make available for reference, prices of commodities of chief importance in the economic life of the Colony ; to compute index numbers of these prices ; to discover what association had taken place in wages and price changes and to discover, as far as possible from these figures, what had been the changes in the prices of the chief commodities entering into the local cost of living.

CO-OPERATIVE CREDIT BANKS.

152. The Credit Banks, which operate under the provisions of Ordinance No. 28 of 1933, continued under the Chairmanship of the District Agricultural Officers, while the duties of Registrar and Auditor are performed by Mr. W. G. Delph, who is attached to headquarters staff. The Director of Agriculture is Chairman of the Co-operative Credit Banks' Board and the Registrar is Secretary.

153. There were on December 31, 1935, twenty-seven banks on the register—15 in Demerara, 8 in Berbice and 4 in Essequibo. At the close of the year the membership of the 24 functioning banks was 10,656 ; West Indians owned 47,196 shares and East Indians 27,911 out of a total issue of 80,903.

154. The lending capital of the banks is derived from two main sources—share capital subscribed by members and Government loans, the balance due to Government being $23,968.44 at December 31, 1935.

155. Loans are made by the Credit Banks to members only and these are chiefly small agriculturalists, with valid security, raising crops of padi, sugar-cane, ground provisions, etc. Some business is also done with persons engaged in coconut oil manufacture, pig-keeping, cow-keeping, huckstering, diamond seeking, etc. Money is also lent for repair of buildings and for purchase of properties.

156. In the following table a comparison of the business done in 1934 and 1935 by all the banks in the Colony is made :

Year.	Number of Loans made.	Amount Lent.	Loans Recovered.	Interest Collected.
1935 ...	707	$ 21,131 97	$ 20,404 01	$ 9,086 71
1934 ...	671	20,144 71	20,067 29	8,082 41
Increase ...	36	$ 987 26	$ 336 72	$ 1,004 31

157. Under the " Rules for Co-operative Credit Banks " provision is made for the building up of reserve funds out of profits on the basis of 4 per cent. per annum of the paid-up capital of a bank at the end of its financial year. The total amount of investments carried out by the banks in this connection at December 31, 1935, was $36,572.96 and, in addition, $1,057.23 was further allocated by the various banks for 1935 to be invested later. There is also a Secretaries' Guarantee Fund in connection with the banks which stood at $3,641.31 at the end of 1935.

158. The position of the Wakenaam, Leguan, Den Amstel-Fellowship,

Beterverwagting-Triumph and Eldorado Block Co-operative Credit Banks has not improved. These banks are still in a bad way on account of various causes and will not be able to meet in full their indebtedness to Government.

ADVISORY BOARD OF AGRICULTURE.

159. Meetings of the Advisory Board of Agriculture were held during the year. The Board considered the question of the establishment of an export trade in bananas and experimental shipments of the Gros Michel and Cavendish varieties, to which further reference is made in paragraphs 115-117, experimental shipments of fruit (mangoes and limes), the Animals (Breed and Contagious Diseases) Ordinance, establishment of an export trade in plantains, etc. Minutes of the meetings have been published in the Agricultural Journal of British Guiana.

160. There was one change in the personnel of the Board, Mr. J. F. Martins resigned and the Hon. E. M. Walcott was appointed in his stead. The following members constituted the Board :—Director of Agriculture (Chairman), Deputy Director of Agriculture (Vice-Chairman), Hon. R. E. Brassington, Hon. F. J. Seaford, Hon. Peer Bacchus. Hon. E. M. Walcott, Messrs. R. B. Hunter and S. Andries.

PUBLICATIONS AND LIBRARY.

161. The Agricultural Journal of British Guiana was published during 1935 but, for economic reasons, Nos. 2 and 3 were published in a single issue. The Library is in receipt of a wide range of periodical literature from all parts of the world, including research bulletins, administration and miscellaneous reports, etc. The Department can only afford to receive such publications on the basis of exchange.

162. Simply worded agricultural notes compiled by the Department of Agriculture and a broadcast talk by the Director on "What's New in Agriculture" were published in the local press for whose co-operation the Department is duly grateful.

163. Sugar Bulletin No. 4, being Part IV. of "Field Experiments with Sugar Cane" was also published during the year.

164. The Director of Agriculture published an article on the "Rice Industry of British Guiana" in the *Empire Journal of Experimental Agriculture*, Vol. 3, No. 2.

165. The re-organised classification and indexing of publications have materially increased the usefulness of the Department's Library for reference purposes. Unfortunately, after the necessary attention has been given to the binding of periodicals, lack of funds practically prohibits the purchase of textbooks.

SECTION III.

ADMINISTRATION.

Staff.

166. Mr. H. Macluskie, Agricultural Superintendent, returned to the Colony on January 24 from long leave which was spent in Scotland, and is now resident in the Essequibo District.

Major T. Bone, Government Veterinary Surgeon, was granted $3\frac{1}{3}\frac{1}{0}$ months' leave of absence as from March 19, 1935. He returned to the Colony on July 23. During his absence the duties of Government Veterinary Surgeon were performed by Mr. H. A. Fraser, B.V.Sc.

Messrs. R. R. Follett-Smith, Chemist-Ecologist, A. deK. Frampton, Agricultural Superintendent, and Major T. Bone, Government Veterinary Surgeon, returned from the Rupununi District on January 18 where they had accompanied the League of Nations' Commission in connection with the settlement of Assyrians in that district.

Mr. A. deK. Frampton, Agricultural Superintendent, was promoted as Agricultural Officer, Federated Malay States, and left the Colony on February 26. He was granted $2\frac{18}{30}$ months' leave of absence prior to assumption of duty in the Straits Settlements.

Mr. A. A. Abraham, Assistant Agricultural Superintendent, has been appointed Agricultural Superintendent *vice* Mr. Frampton with effect as from May 15, 1935.

Mr. H. D. Huggins, Agricultural Superintendent was granted two weeks' casual leave of absence from the Colony as from February 26 to March 10, 1935.

Mr. W. G. Delph, Registrar of Banks, who had been temporarily transferred as Secretary, District Administration, resumed duty on March 13. He acted as Accountant during the leave of absence of Mr. A. A. Thorne.

Mr. A. A. Thorne, Accountant, was granted $6\frac{21}{30}$ months' leave of absence as from March 24 to October 15, 1935. He was also granted 8 days leave of absence on half pay as from November 15.

Mr. L. D. Cleare, Government Entomologist, was granted $6\frac{21}{30}$ months' leave of absence and left the Colony for United Kingdom *via* Barbados on April 8, 1935. During this period he was granted duty leave to attend the Fourth Imperial Entomological Conference held in London and returned to the Colony on December 20, 1935.

Mr. D. D. Blackman, Meteorological Observer, was granted three months leave of absence on full pay and an extension of three weeks on half pay. He left the Colony for Barbados on March 8, returning on June 28, 1935.

Mr. R. R. Follett-Smith, Chemist-Ecologist, was granted $3\frac{26}{30}$ months' leave of absence as from May 21, 1935, to be spent in the United Kingdom. During this period he was granted duty leave to attend the Third International Congress of Soil Science held in Oxford, July—August, 1935. He returned to the Colony on November 8, 1935.

Professor J. S. Dash, Director of Agriculture, was granted two weeks' casual leave of absence to be spent in Barbados. The Director left the Colony on May 8 and returned on May 21, 1935. During his absence Mr. F. Burnett acted as Director of Agricuture.

Mr. F. Burnett, Deputy Director of Agriculture was granted $3\frac{13}{30}$ months' leave of absence which was spent in the United Kingdom. He returned to the Colony on October 7, 1935. During his absence Mr. E. M. Peterkin, Agricultural Superintendent, acted as Deputy Director.

Miss V. Chan Choong, Librarian, was granted three months' leave of absence and left the Colony for Trinidad on May 1, returning on July 31, 1935.

Mr. E. M. Morgan, Agricultural Instructor, was granted six months' leave of absence as from August 26, 1935. He left the Colony for the United States where he proposes to take a short course of study at the Tuskegee Institute, Alabama.

Expenditure.

167. The total vote assigned to the Department by the Legislature at its Session for the year was $120,042. The following expenditure was voted on Supplementary Estimates during the year.

	Excesses to be met from savings on other sub-heads.
Other Charges :—	
Travelling Expenses and Subsistence Allowances ...	$600 00
Miscellaneous	15 00
Contingencies	85 00
School Gardens	35
	$700 35

Table XIV.

ANNUAL ESTIMATES, 1935.

No. of Sub-vote.	Sub-vote.	Balance Unexpended.	Excess Expenditure.
1 (1-15)..	Personal Emoluments—Fixed	$ 1,171 45	
(16-28).	Do. —Unfixed	88 47	
	Other Charges:		
2 ...	Allowance for upkeep of Bicycles	17 00	
3 ...	Travelling Expenses and Subsistence Allowances	...	$ 536 72
4 ...	Library and Publications	15	
5 ...	Furniture	4 93	
6 ...	Freight	61	
7 ...	Uniforms for Messengers	2 01	
8 ...	Uniforms for Supernumerary Constables	2 88	
9 ...	Miscellaneous	...	11 30
10 ...	Provision and Maintenance of Scientific Apparatus and Equipment ...	148 93	
11 ...	Botanic Gardens, Maintenance of	1 16	
12 ...	Upkeep of Government Gardens and Grounds	7 01	
13 ...	Purchase, Production and Distribution of Seeds and Plants	18 89	
14 ...	Experiment Stations	18 35	
15 ...	Apiary, Maintenance and upkeep of	29 22	
16 ...	Livestock—Purchase and maintenance of	31 31	
18 ...	Rice Grading Expenses	102 35	
19 ...	Agricultural Apprentices	8 96	
20 ...	Veterinary Preventive Measures	276 16	
21 ...	Plant Pests Preventive Measures	26 62	
22 ...	Contingencies	...	84 03
23 ...	Soil Surveys	109 82	
24 ...	Experiments with Plants of Insecticidal Value	100 00	
25 ...	School Gardens	...	35
26 ...	Travelling Expenses of Colony's Representative at the Third International Congress of Soil Science	25 32	
28 ...	Seed Padi Distribution	...	288 00
	Loss on Banana Trial Shipment	...	252 47
	Total Excesses or Savings	$ 2,191 60	$ 1,172 87

168. The payments into the Treasury for the year were as follows :—

Agricultural Stations	$ 1,484 64
Botanic Gardens	386 42
Sale of Official Publications	85 80
Sale of Rice Guide Samples	14 01
Miscellaneous—Sundries	49 49
Sundry Reimbursements	2,880 00
	$ 4,900 36

In addition, revenue to the extent of $2,061.98 was earned as Rice Grading Fees collected for convenience by the Customs Department.

169. Administration duties remain heavy, and it is difficult to cope with the increasing volume of work, the nature of which invariably requires careful study and prompt attention. This applies not only to matters affecting departmental policy, preparation of memoranda and reports on various schemes for development, drainage and irrigation questions, but also in regard to general correspondence, committee meetings, interviews, Executive and Legislative Council work. During

the year several officers were on leave and this helped further to accentuate the position, as there is no extra staff to fill any gaps due to sickness, leave or other enforced absences.

170. In addition to his duties on the Executive Council and Legislative Council the Director served on the following committees, etc., during the year :—Chairman ; Essequibo Coast Commission, Livestock Trade Committee, Board of Agriculture, Co-operative Credit Banks' Board, Sugar Experiment Stations' Committee, Agricultural Committees for East and West Demerara ; Member : Rice Marketing Board, British Guiana Beekeepers' Association, and Central Cane Farming Committee ; Honorary Member ; Chambers of Commerce, Georgetown and New Amsterdam.

SECTION IV.

AGRICULTURAL LEGISLATION.

171. The following is the agricultural legislation which was enacted during 1935 :

1. *Rice (Export Trade) Ordinance—No. 17 of 1935*—and *Regulations* thereto. This Ordinance provided for the establishment of a board with powers to regulate and control the price and exportation of rice produced in the Colony, thus extending the period of activity of the extant Rice Marketing Board. By this Ordinance, Ordinances No. 47 of 1932 and 21 of 1933 were repealed.

2. *Public Gardens and Agricultural Shows Ordinance—No. 34 of 1935.* The chief feature of this Ordinance is that Government is empowered to make regulations for the control and management of Government Gardens and Grounds and with respect to the holding of agricultural shows.

3. *Coconut Products (Control) Ordinance*—No. 36 of 1935. In this Ordinance, provision is made for regulating the manufacture and sale of certain products from the kernel of the coconut, and for purposes connected therewith. Provision is also made for the constitution of a Copra Brokers' Board. The Governor-in-Council is empowered to fix the price at which copra is sold in the Colony and also to fix standards of quality and price for coconut products manufactured and intended to be sold in the Colony. It supersedes Ordinances Nos. 31 of 1933 and 23 of 1934 which are thereby repealed.

4. *Plant Diseases and Pests (Prevention) Ordinance*—No. 37 of 1935. The main object of this Ordinance is to provide against the introduction, transmission and spread of diseases and pests in the Colony. By this Ordinance, Cap. 164, of the laws of British Guiana is repealed.

5. *Importation of Bees Ordinance*—No. 38 of 1935. This ordinance regulates the importation of bees and beekeepers' stock.

ACKNOWLEDGEMENTS.

172. In conclusion, I should like to express my great appreciation of the loyal help rendered by the staff during the year. The thanks of the Department are due also to the agricultural and mercantile community for assistance generously rendered, and to the local newspapers for their courtesy in distributing agricultural information.

J. SYDNEY DASH,
Director of Agriculture.

May 15, 1936.

HEAD OFFICE.

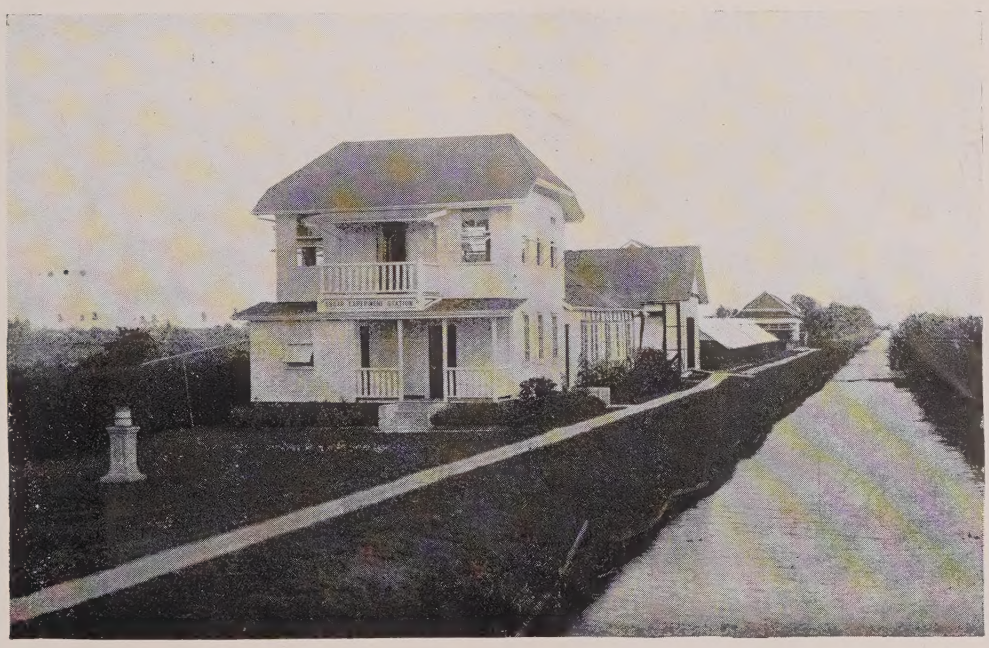
Ground Floor—Botany, Plant Pathology and Entomology.
Top Floor —Administration, Library and Economics.

CHEMISTRY LABORATORY.

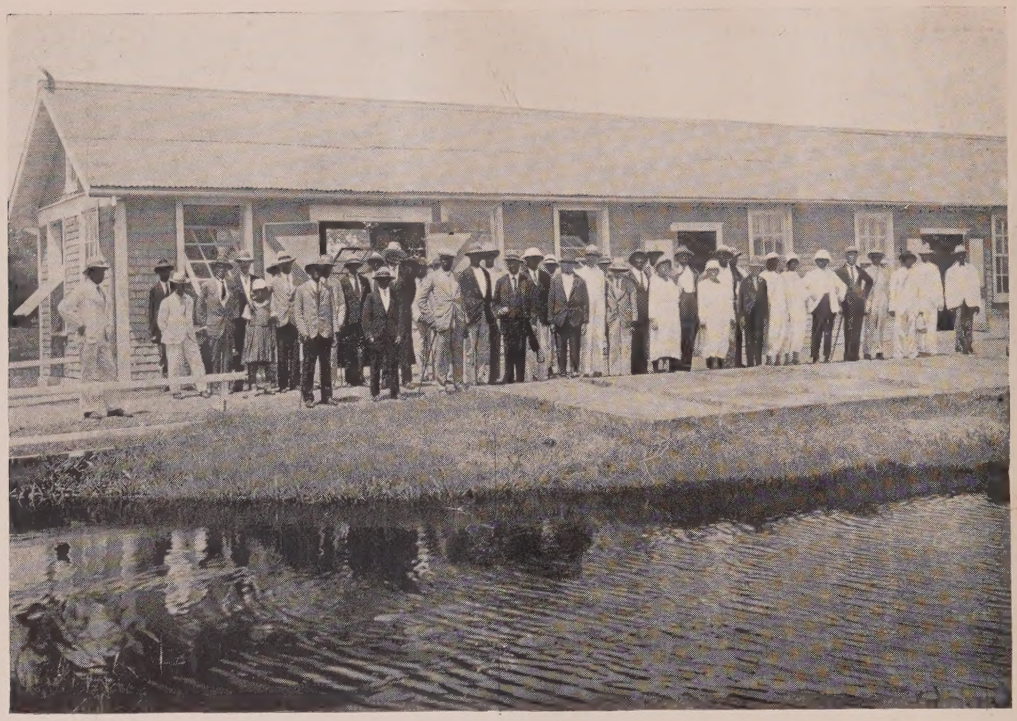
Plant Houses and Director's House.

Botanic Gardens—Entrance and Office.

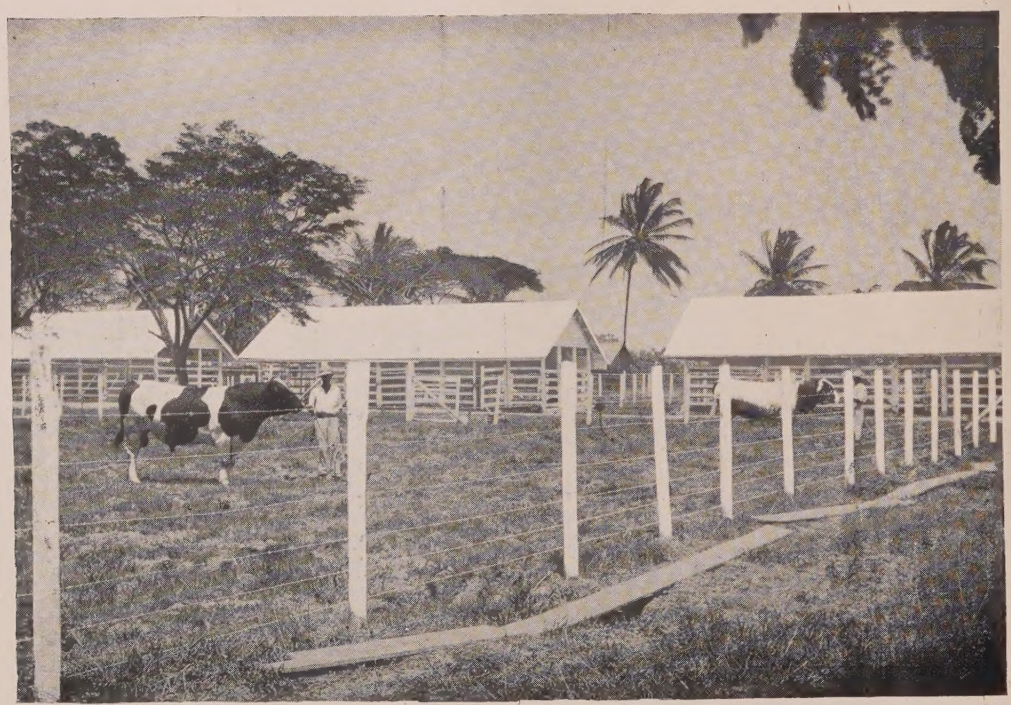
Apiary.



Central Sugar Station.



Field Offices of Central Rice Station and Livestock Division. Farmers' Field Day.



Bull Pens and Paddocks—Livestock Division.

SUGAR EXPERIMENT STATIONS' COMMITTEE.

Director of Agriculture, Chairman, *ex officio*		
Hon. M. B. G. Austin	...Georgetown	Representing the Sugar Industry which maintains the Stations.
Mr. J. Bee	...Pln. Albion	
„ G. M. Eccles	... „ Blairmont	
„ J. C. Gibson	... „ Port Mourant	
„ A. Murison	... „ Pln. Uitvlugt	
„ R. E. Rhodes	... „ Diamond	

CO-OPERATIVE CREDIT BANKS' BOARD.

Director of Agriculture, Chairman, *ex-officio*		
Dr. the Hon. J. B. Singh	...	Members.
Rev. A. E. Dyett	...	
Mr. C. Farnum	...	
Hon. J. L. Wills	...	

DISTRICT AGRICULTURAL COMMITTEES.

East Demerara.

Director of Agriculture, Chairman.		
District Commissioner.		
Deputy Director of Agriculture	...	Members.
Hon. J. I. D'Aguiar	...	
„ E. M. Walcott	...	
Mr. W. H. Richards	...	
„ J. E. Wills	...	
„ S. Andries	...	
„ M. Ghani	...	

West Demerara.

Director of Agriculture, Chairman.		
District Commissioner.		
Deputy Director of Agriculture.		Members.
Hon. J. B. Singh	...	
„ J. W. Jackson	...	
Mr. A. Murison	...	
„ R. B. Hunter	...	
„ R. P. Carryl	...	
„ J. C. Da Silva	...	
„ W. Ramdeholl	...	
A. Rayman	...	